Ben-Gurion University of the Negev

The Jacob Blaustein Institutes for Desert Research

The Albert Katz International School for Desert Studies

Cooperative Management Structure for the Proposed Red Sea-Dead Sea Conduit

Thesis submitted in partial fulfillment of the requirements for the degree of "Master of Arts"

By: Elana Katz-Mink

July 2010

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Abstract

The Red Sea-Dead Sea Conduit is the latest iteration of a plan to bring water to the Dead Sea for replenishment, desalination, and possible energy production. The project is now undergoing a two-year feasibility study, overseen by the World Bank, to determine the costs and benefits of constructing a conduit. The proposed conduit will be a cooperative project between Jordan, Israel, and the Palestinian Authority (the West Bank). The feasibility study has not yet addressed the project's management structure. This is where my interest lies, in light of the complexity of the cooperative/joint nature of the project. My research addresses the following three questions: Can cooperative management be achieved in the context of this region? What steps are necessary to achieve sustainable cooperative management between the three polities? Which critical aspects ought to be included in the management structure?

I have approached these questions by selecting case studies from other transboundary water management projects and by interviewing experts within the three polities. The cases of the Great Lakes Basin, the Nile Basin, the North-Western Sahara Aquifer System, and the Rio Grande Basin help to shed light on what is involved in creating a cooperative management structure, as well as what does and does not work. I interviewed a number of individuals from the government, academic, and NGO sectors in Israel, Jordan, and the West Bank (Palestinian Authority) in order to investigate the perspective of those who will be involved in the project directly or indirectly. This aided in my tailoring of the project's management structure to the intricacies present in this region.

I encountered many useful facets of management structures, both positive and negative in the case studies. The Great Lakes Basin provided a useful structure format. The Nile Basin Initiative helped me to understand the importance of a cooperative agreement. The North-Western Sahara Aquifer System provided a detailed example of a phasing structure. The Rio Grande Basin provided a negative example for the proposed Red Dead Conduit, because the governance structure of the former proved not to be conducive for true cooperative management.

The perceptions I encountered in my interviews were varied, but provided useful insight. The goals of the project, as perceived by the interviewees, were, for the most part, closely related and easily intertwined. The constraints noted were legitimate and some

may be more easily addressed, like the energy feasibility, while others, like politics, will take a great amount of effort. None of the constraints stated presented a clear obstruction to the project's fruition; rather they provided points that must be addressed in the planning and execution of the project. The interviewees' ideas of the management structure largely overlapped and helped give perspective on how the people of the region feel the project would be managed best.

The management structure that I recommend after much research and analysis is one that is apolitical and distanced from the government. Jordan, Israel, and the Palestinian Authority (West Bank) should have equal representation in the management structure. I suggest that the project should proceed with a four-phased structure, beginning with the current feasibility study and confidence building activities (such as public fora, conventions, and workshops). This first phase is necessary to initiate contact between the participating parties and build trust, while establishing the feasibility of the project. If the project is considered feasible, the second phase should entail further confidence building activities, negotiation meetings towards reaching a cooperative agreement, and the establishment of a technical committee. The management structure's technical committee should be equally representative, and should also, among other things, establish a shared information database—all participatory polities having equal access. The third phase should entail the signing of a cooperative agreement, the establishment of the management structure, and the subsequent construction of the conduit. A non-ambiguous cooperative agreement prior to the initiation of construction is imperative in order to establish the management structure and quell future points of conflict, resulting from vague agreement language, as exhibited in the Nile Basin Initiative. The fourth phase aims to support the project's sustainability and to aid in the possible establishment of future Jordan River Basin cooperation—involving Syria, Lebanon, Israel, Jordan, and the Palestinian Authority. Indeed, it seems practical to proceed with the proposed phasing scheme in order to ensure that the various parts of the project are executed in their appropriate organizational hierarchy.

The project is complex and presents many intricacies that have to be considered. The potential exists for cooperation and the project may provide solutions to the issues that it seeks to address—new water, saving the Dead Sea, and regional cooperation. Regardless of the outcome of the World Bank feasibility study, it is my sincere wish that this thesis will contribute to the project and/or future cooperative developments in the region.

Acknowledgements

The countless hours spent on this work have not been a product of my solitude. I have had help from numerous individuals, chiefly from my supervisor, Prof. Hendrik Bruins, who helped to guide and support my endeavors and correct my errors. Thank you to Dr. Clive Lipchin for his support during my master's thesis research. I would also like to thank Prof. Yaakov Garb and Prof. Itay Fischhendler for sitting on my thesis committee.

I am especially grateful to all of the people in Jordan, Israel, and the West Bank whom I was able to interview. They were immensely helpful in my research. A special thanks to Ana Elisa Cascão for providing me with much information on the Nile Basin Initiative that I may have not been otherwise able to find.

It is with my deepest gratitude that I extend my appreciation to my family and friends in their support and help in the execution of this work. Thank you to Eliot Sherman for being a sounding board for my ideas and frustrations, and to Chagai Mendelson for his necessary distraction and support.

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List of Acronyms

RDC- Red Sea-Dead Sea Conduit
NRB- Nile River Basin
NBI- Nile Basin Initiative
NWSAS- North-Western Sahara Aquifer System
OSS- Sahara and Sahel Observatory (L'Observatoire du Sahara et du Sahel)
CAF- Cooperative Agreement Framework (NBI)
MCM- Million Cubic Meters
BCM- Billion Cubic Meters
ERM- Environmental Resource Management
MW- Megawatts
MDSC- Mediterranean Sea-Dead Sea Conduit
PLO- Palestinian Liberation Organization
PFLP- Popular Front for the Liberation of Palestine
FOEME- Friends of the Earth Middle East
UN- United Nations
UNW-DPC- UN-Water Decade Programme on Capacity Development
IJC- International Joint Commission
NILE-COM- Council of Ministers of Water Affairs (of the Nile Basin Countries)
NILE-TAC- Technical Advisory Committee (of the Nile Basin Countries)
Nile-Sec- Nile Basin Secretariat (of the Nile Basin Countries)
SVP- Shared Vision Programs (NBI)
SAP- Subsidiary Action Programs (NBI)
UNDP- United Nations Development Programme
CIDA- Canadian International Development Agency
NRBAP- The Nile River Basin Action Plan
NELSAP- Nile Equatorial Lakes Subsidiary Action Program
ENSAP- Eastern Nile Subsidiary Action Program
UNESCO- United Nations Educational, Scientific and Cultural Organization
IS- Information System (NWSAS)
RGB- Rio Grande Basin
UMA- Union du Mahgreb
IBC- International Boundary Commission
IBWC- International Boundary Water Commission
PNWTF- Paso del Norte Water Task Force
NGO- Non-Governmental Organization
CBSI- Confidence Building and Stakeholder Involvement Project (NBI)
RDCC- Red Sea-Dead Sea Conduit Commission
GEF- Global Environment Facility
UMA- Union du Mahgreb

1 Introduction

The Red Sea-Dead Sea Conduit is the latest iteration of a plan to bring water to the Dead Sea for replenishment, desalination, and possible energy production. The project is now undergoing a two-year feasibility study, overseen by the World Bank, to determine the costs and benefits of constructing a conduit. The proposed conduit itself will be a cooperative project between Jordan, Israel, and the Palestinian Authority.

The project's details are currently taking shape and have not yet been codified. The idea of the Red Sea-Dead Sea Conduit (hereafter, RDC) is to bring water from the Gulf of Aqaba, at the northern most point of the Red Sea, to the Dead Sea. The pipeline is expected to span nearly 180 km, entirely within Jordanian territory.[1] The intake for the pipeline will be located in the Gulf of Aqaba; the water will travel to a pumping station and be elevated to 125 meters above sea level.[2] The water will then travel through an enclosed conduit pipeline, the exact location of which is still undetermined, to a pretreatment plant at the Dead Sea. The location of this plant and the exact output of the brine are, as of yet, undetermined as well. The water will then, by force of gravity, descend more than 400 meters to a pumping station located on the Dead Sea (refer to Image 1).[3] The resulting hydropower (which may need to be further augmented by other energy sources) will enable the Red Sea water to be desalinated. Two-thirds of the desalinated water is to be allotted to Jordan and one-third will be divided between Israel and the Palestinian Authority. The conduit plans to take 2,000 million cubic meters (MCM)/year of seawater from the Gulf of Aqaba and, through desalination, deliver about 900 MCM of fresh water annually. The desalination waste product, or brine, amounting to 1050 MCM/year, will be deposited into the Dead Sea to stabilize and over time help replenish the shrinking water level of the sea.[4]

The project has three major goals, as expounded by the World Bank in the Terms of Reference for the project. The goals are to: "save the Dead Sea from environmental

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[1] The World Bank, Draft 13 March 2009, http://siteresources.worldbank.org/INTREDSEADEADSEA/Resources/RDS_Additional_Studies_TORs_13-March09.pdf

[2] Michael Beyth, "The Red Sea and the Mediterranean–Dead Sea canal project," Geological Survey of Israel, Accepted 19 June 2007: 5.

[3] Beyth, "The Red Sea and the Mediterranean-Dead Sea canal project," 5.

[4] "Red Sea – Dead Sea Water Conveyance Study Program Additional Studies," 1.
Hani Abu Qdais, "Environmental Impacts of Mega Desalination Projects: a case study of the Red-Dead Sea Conveyor," Paper presented at the conference on Desalination and the Environment, Halkidiki, Greece, April 22–25, 2007: 1.

degradation, desalinate water/generate energy at affordable prices for Jordan, Israel and the Palestinian Authority, [and to] build a symbol of peace and cooperation in the Middle East."[5] The project also aims to serve, not only as a water conduit, but as a conduit for peace and cooperation as well, and is sometimes referred to as the "Peace Conduit."

The World Bank feasibility study involves the British company Environmental Resource Management (ERM) and the French company Coyne et Bellier. Various national institutions in Israel, the Palestinian Authority, and Jordan are also included. The funding for the study has come from multiple international donors. The study will assess the environmental, social, engineering, and economic aspects of the project.[6] The research for the study has been divided as such: ERM is in charge of the social and environmental analyses, while Coyne et Bellier is focusing on the economic and engineering analyses. The research has been further divided into four sub-studies:

1. Red Sea Study - Oceanographic processes and environmental impacts in the Gulf of Aqaba/Eilat due to extraction of different amounts of sea water (in this website -- the Red Sea Modeling Study)
2. Water Conveyance System Study - Red Sea to the Dead Sea (part of the Feasibility Study)
3. Dead Sea Region Study - Physical, chemical and biological properties of the Dead Sea and impact of mixing Red Sea and Dead Sea waters in the Dead Sea (in this website the Dead Sea Region Modeling Study)
4. Hydropower and Desalination Facilities (part of the Feasibility Study)[7]

1.1 Project History

The origins of this project date back to the late 19th century. In 1855, William Allen, an Englishmen, suggested the linkage of Haifa Bay, the Jordan River, the Dead Sea, and the

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[5] "Red Sea-Dead Sea Water Conveyance Projects: Feasibility Study - Environmental, Technical and Economic and Environmental and Social Assessment; Terms of Reference," World Bank Terms. April 19, 2005: 1.

[6] Billy Frankel, "Environmental Organizations Oppose Red-Dead Sea Canal: World Bank study is limited," Friends of the Earth Middle East, found on Maariv Website, July 30, 2008.

[7] "Study Program Process," Red Sea-Dead Sea Water Conveyance Study Program," The World Bank, http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTREDSEADEADSEA/0,,contentMDK:21832516~pagePK:64168445~piPK:64168309~theSitePK:5174617,00.html

Gulf of Aqaba via a canal system, as a cheaper alternative to the Suez Canal.[8] While this dream did not come to fruition, mainly due to the British control over the Suez Canal, the idea carried on in later reconstitutions. The proposal of this plan took place at nearly the same time as the discovery of the enormous depression of the Dead Sea Rift. This information factored into the later ideas surrounding a canal/waterway conduit. Nearly fifty years later, in 1896, Johann Kremenitzki suggested the use of the differing levels between the Mediterranean Sea and the Dead Sea in order to generate hydroelectric power. Kremenitzki's suggestion to Theodor Hertzl, together with the development of this idea into an irrigation project by Max Boutcart, were published in Herzl's novel *Altneuland*, in 1902.[9]

After these preliminary conceptions of a transboundary waterway conduit, there were discussions of multiple routes and variations on the original structure for several decades. None were seriously considered until the 1973 energy crisis threw energy generation into the limelight. The implementation of the project for the goal of power generation was studied thoroughly at this point, the end goal being the production of 800 MW of electricity for public consumption during peak hours. The project did not come to fruition at this point; however, agreements were made on the part of the government with regard to the proposed project. In 1974, the government agreed that a tunnel between the two seas would be feasible and in 1977 they recommended the Qatif-Massada route.[10] In 1981, the Mediterranean-Dead Sea Company was established by the government in order to push plans for the canal forward; however, this plan was abandoned in 1985 due to the canal's intended route through the disputed Gaza Strip as well as the economic enormity of the proposed infrastructure.[11] The project was again brought forth during the Oslo Accords in 1993, but again led nowhere. After these failed proposals the project took on a new goal: desalination. The Ministry of Energy and Infrastructure initiated a hydrostatic project using reverse osmosis in order to provide desalinated seawater in the 1990's.

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[8] William Allen, *The Dead Sea, A New Route to India: with other fragments and gleanings in the East*, London: Longman, Brown, Green, and Longmans, 1855.
Basel N. Asmar, "The Science and Politics of the Dead Sea: Red Sea Canal or Pipeline," *Journal of Environment & Development* 12, no. 3 (September 2003).
Michael Beyth, "The Red Sea and the Mediterranean–Dead Sea canal project,"
Geological Survey of Israel, Accepted 19 June 2007.
[9] Asmar.
[10] Ibid.
[11] Ibid.

Concomitant to the project proposals on the Israeli side of the Border, the Jordanians answered with plans of their own. William Allen also mentioned the Red Sea-Dead Sea Project in 1855.[12] In 1981 the project was discussed as a unilateral response from Jordan to the Israeli Mediterranean Sea-Dead Sea Canal (MDSC hereafter) project. Neeman and Schul studied both routes and found the Mediterranean option to be superior to the Red Sea option based on the length of the canal and seismic sensitivity of the area along the Dead Sea Rift Valley. Elisha Kally evaluated the two projects in 1991 and found that doing both was not feasible and that cooperation by both Jordan and Israel was essential with regard to this project.[13] Since the Oslo Accords of 1993 and the Peace Treaty between Jordan and Israel of 1994, this cooperation has become possible and the idea of the canal much more feasible. In recent years, three proposed plans have come to be recognized as probable and possible solutions to the water crisis and decline of the Dead Sea—the revitalization of the Jordan River, the MDSC (through various routes), and the Red Sea-Dead Sea Conduit (RDC hereafter).

A feasibility study, on the multiple route options of the RDC, conducted by Harza, took place in 1994. There were five routes proposed, but the most feasible route left standing was that of the currently proposed project—a 203 km conduit along the Arava Rift Valley, but within Jordanian territory. The proposed RDC of today follows a slightly altered route (180 km) due mostly to political and geological reasons.

Since the peace treaty was signed in 1994, a cooperative project, between Israel and Jordan, has been a leading consideration. The continued instability in the Gaza Strip (which looked to be the best route for the MDSC) has diminished the attractiveness of a Mediterranean route. Due to the extreme water scarcity that is faced by Jordan, the water needs in Israel and the Palestinian Authority, and importance of the Dead Sea to multiple Israeli sectors (i.e. society, economy, culture), the RDC has become the project deemed to be most ideal, at the moment.

[12] Allen, 341.
[13] Asmar.

1.2 Physical Context of the Project

1.2.1 Geography, Geology, Hydrology, and Ecology of the Project Area

The Dead Sea is a hyper-saline terminal lake located on the border of Israel and Jordan, with some territory within the Palestinian Authority. The Dead Sea is located in the Dead Sea Rift Valley, part of the Syrian-African Rift Valley (the longest valley in the world).[14] During the late Pleistocene, Lake Lisan covered a large territory of the valley and was the precursor to the Dead Sea.[15] During the Late Pleistocene the level of Lake Lisan declined with ups and downs to what is now the Dead Sea.[16] The Dead Sea was predominately fed by the Jordan River, whose headwaters originate from the runoff waters of Mt. Hermon (2814 m in elevation), located within Israeli territory since the June 1967 war. From the Anti-Lebanon Mountain Range, the river flows through the upper Hula Valley and then into the Kinneret (220 m below sea level). At this point the river travels another 105 km in distance (300 km including the meandering of the river course) to the Dead Sea.[17] An additional influx into the Dead Sea, albeit a small portion, is fed from local springs. The Dead Sea's historical level, -392 m below sea level, has declined by 25 m since 1930. Half of this 25 m drop took place in the last 20 years, such that the current rate of depletion is 1 m/yr; the current level of the Dead Sea is -419 m below sea level.[18]

The depletion rate has increased over the last several decades, from .5 m/yr, to what we now know it to be, 1 m/yr.[19] There are two major factors that are responsible for the rapid rate

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[14] Rogers, David J, "Innovative Solution for Water Wars in Israel, Jordan and the Palestinian Authority," International Conference on Military Geology and Geography, 2003: 2.

[15] Ittai Gavrieli, Amos Bein, and Aharon Oren, "The Expected Impact of the 'Peace Conduit' Project (The Red Sea-Dead Sea Pipeline) on the Dead Sea," *Mitigation and Adaptation Strategies for Global Change* 10, (2005).

[16] Arieh Singer, *The Soils of Israel*, Berlin: Springer, 2007.

[17] Rogers, 2.

[18] Abu Qdais, 1.
Moshe Shirav-Schwartz, and others, "Red Sea-Dead Sea Conduit Geo-Environmental Study Along the Arava Valley," Geological Survey of Israel, 2006: 3.
D. A. Anati, and S. Shasha, Dead Sea Surface-Level Changes, *Israel Journal of Earth Sciences IJERAK* 38, no.1 (1989).
K. K. Assaf, and others, "Overview of Middle East Water Resources," Water Resources of Palestinian, Jordanian, and Israeli Interest, compiled by USGS for the EXACT Middle East Water Data Banks Project, US Geological Service, (1998), http://water.usgs.gov/exact/overview/index.htm.

[19] Asmar Basel N., "The Science and Politics of the Dead Sea: Red Sea Canal or Pipeline" Journal of Environment & Development 12, no. 3 (September 2003): 1.

of anthropogenic decline of the Dead Sea, they are: 80% diversion of water from the Jordan River due to the 1964 construction of the National Water Carrier in Israel, and various canal and dam projects in Jordan. These projects reduced the Jordan River's flow from 1300 MCM/year, prior to the 1960's, to about 200 MCM/year at present.[20] Further contributory water abstraction is attributed to projects in Syria and Lebanon, as well. The other 20% of the decline is attributed to the increased evaporation of the Dead Sea water, due to the industrial evaporation ponds built and managed by the Dead Sea Works (in Israel) and the Arab Potash Company (in Jordan). The companies built evaporation ponds that increase the rate of evaporation in order to produce mineral products like industrial salts, potash, bromine, and magnesium chloride.[21]

The Dead Sea is a hyper-saline body with a consistency of 340 g/l (340,000 mg/l). The surface area of the Dead Sea is now 637 km^2, reduced from 940 km^2 in the 1960's.[22] The Dead Sea is currently at less than -419 m, the lowest spot on earth, and it reaches a depth of 400 m.[23] The Dead Sea is a unique environment, which is home to rare bacteria, flora, and fauna, that live within the sea itself, in the pools that are located on the edges of the Sea, and in the surrounding basin area.[24] The Dead Sea has a mineral composite that has rare medicinal properties and also holds religious significance for many people. It is situated in a politically precarious area, with territory that is claimed by Israel, Jordan, and the Palestinian Authority.

The Gulf of Aqaba is considered a semi-enclosed sea, because its length (180 km), to the Straights of Tiran—connecting the Gulf to the rest of the Red Sea—is more than 4 times its width (6 km) (refer to Image 2). Due to the geographical constraints of the sea, there is limited water exchange between the Gulf of Aqaba and the Red Sea, thus pollution or changes that take place within the Gulf can have serious consequences on the flora and fauna of the region—aquatic and terrestrial. The Gulf of Aqaba is very unique in that it contains the northernmost coral reef in the world. The Gulf of Aqaba is also an international body of water with shoreline territory belonging to Egypt, Israel, Jordan, and Saudi Arabia. These countries had and continue to have, in the case of Israel and Saudi

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[20] Michael Beyth, "Water Crisis in Israel," in *Water*, found at http://www.gsi.gov.il/Eng/_Uploads/140Water-Crisis-Israel.pdf, 174.
[21] Asmar, 2-3.
[22] Asmar, 1.
[23] Abu Qdais, 4.
[24] Abu Qdais, 5.

Arabia, hostile relations and conflict with one another.

1.2.2 Human Settlement

The human settlement in the Dead Sea Basin and surrounding the intended path of the conduit, along the border and ending at the Gulf of Aqaba, is quite varied. In both Jordan and Israel there are hotels and multiple tourist sites along the shores of the Dead Sea and within the basin. Tourism is also extremely important to the port cities of Eilat and Aqaba. Both countries have agricultural areas along the Arava Valley as well as industries located on the Dead Sea (the Dead Sea Works Company and the Arava Potash Company) as well as on the Gulf of Aqaba (namely import/export and shipping). Jordan has a few small towns located in the Arava Valley and near the Dead Sea, while Israel has multiple Kibbutzism, Moshavim, and other bedroom communities.

The continuation of human settlement supported by water supply—for agriculture, industry, and domestic use—socio-economic incentives (occupational opportunities, and production), and peaceful land tenure is imperative to both Israel and Jordan. The Palestinian Authority occupies an entirely different position in this respect. The West Bank has riparian rights to territory located on the Dead Sea in theoretical terms; however, in practical terms their access to this land is quite complicated, due to the Israeli occupation of their territory. The Palestinian Authority values the land that is theoretically theirs, with prospects of future uses for settlement, infrastructure, etc. The Palestinian Authority has limited access to what little water exists in this area, be it from the Jordan River or small springs, and their human settlement of the area also depends on this essential element for human life.

1.2.3 Environment

The Arava Valley has a hyper arid environment. The area receives extremely small amounts of yearly precipitation (ranging from 30 mm to 50 mm) and only during the rainy season from October to May.[25] The Sudanian vegetation of the area is unique in the region. The water used in the human settlement of this area comes from local aquifers,

[25] H.J. Bruins, "Desert Environment and Geoarchaeology of the Wadi Arabah," In Crossing the Rift: Resources, Routes, and Settlement Patterns and Interaction in the Wadi Arabah, edited by P. Bienkowski and K. Galor. Oxford: Oxbow Books, Levant Supplementary Series (2006), 3: 2.

which are in danger of over-pumping.

The geological characteristic of the region also demands consideration. The Arava Valley contains fault lines between the Syrian and African Plates, which pose earthquake threats to the construction and existence of a conduit and in the area. Flash flooding is another threat to the construction and operation of the conduit in the Arava Valley.

1.3 Political Context of the Region

(this section will be limited to what I have deemed relevant material to explain the context between the 3 polities involved and the intricacy of their current water-sharing mechanisms)

This region has a long and convoluted political history. The contemporary politics of the three nations involved in this project—Israel, Jordan, and the Palestinian Authority—date back to the early 20th century. Great Britain was granted a mandate, by the League of Nations, over Palestine, in 1922. At this point, Great Britain separated the area of Transjordan into a semi-autonomous area, which was later granted statehood in 1946 (changing the name to the Hashemite Kingdom of Jordan).[26] In terms of Palestine, the mandate required, *inter alia*, the implementation of the Balfour Declaration (1917), which cited the British backing of "the establishment in Palestine of a national home for the Jewish people."[27] On November 29, 1947 the General Assembly of the United Nations approved the Partition Plan for Palestine. The Partition Plan gave Israel a portion of Palestine for the creation of the Jewish State (Image 3). On November 30th, 1947 a civil war broke out in Palestine, which is now referred to as the 1948 War of Independence. On May 14, 1948 the British Mandate period in Palestine ended. On May 15th the State of Israel was proclaimed and the Arab forces of Iraq, Syria, Lebanon, Transjordan, and Egypt invaded. On the 17th of January 1949 the hostilities of the war ceased and from February to July of 1949 armistices were signed between Israel and Egypt, Lebanon, Transjordan,

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[26] "Jordan," CIA The World Factbook, https://www.cia.gov/library/publications/the-world-factbook/geos/jo.html
"The Making of Transjordan," History, The Hashemite Kingdom of Jordan, http://www.kinghussein.gov.jo/his_transjordan.html

[27] "The Balfour Declaration, November 2, 1917," Israel Ministry of Foreign Affairs, http://www.mfa.gov.il/MFA/Peace+Process/Guide+to+the+Peace+Process/The+Balfour+Declaration.htm

and Syria.[28]

There were skirmishes with the newly formed State of Israel in the following years. On February 3rd, 1964, the Palestinian Liberation Organization was founded with the express mission of the destruction of the Jewish State of Israel. The tension between the newly formed state and that of the Palestinians and their Arab neighbors culminated in the Six Day War, called The 1967 War or An-Naksah (the setback) in Arabic. The war was triggered by the ensuing tensions between Israel and its neighboring countries. On June 5, Israel went to war against the combined forces of Egypt, Syria, Jordan, and Iraq. On June 10, 1967, Israel defeated the troops and ruled over the Sinai Peninsula, the West Bank, the Gaza Strip, East Jerusalem, and the Golan Heights.

Following the capture of the West Bank, and the subsequent dispersal of Fatah forces by the Israeli Defense Force (IDF), Israel had numerous clashes with Fatah guerillas and the Jordanian Army. On March 21, 1968 Israel fought against the PLO forces and the Jordanian Army in the Battle of Karameh.

The next significant military event for the three polities is known as "Black September." The origins of this period can be attributed to the Jordanian government's anxiety over the Palestinian majority in their country (the refugees from Israel and the West Bank). The dissonance between the majority population and the ruling minority party was felt in Jordan's political actions regarding both foreign policy and relations with Israel. After negotiation attempts and legal restrictions—the Seven-Point Agreement in 1968, and the Ten-Point Edict in 1970—as well as an attempted assassination of the King, Jordan grew weary of the battles with Palestinian rebels and on September 15, 1970 attacked Palestinian headquarters in Amman and other cities throughout Jordan. Multiple countries became involved in the conflict, but the fighting continued. Despite numerous attempts at coming to a peace agreement the fighting did not actually cease until July 1971.[29]

There were multiple terrorist attacks in Israel by the Popular Front for the Liberation of Palestine (PFLP) and a group called "Black September" (Palestinian) during the early 1970's. The Yom Kippur War, which lasted from the 6th until the 26th of October 1973,

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[28] Rogan, Eugene L. and Avi Shlaim eds., *The War for Palestine*, Cambridge: Cambridge University Press (2007), ix.

[29] Philip Robins, *A History of Jordan*, Cambridge: Cambridge University Press, 2004. E., George, H. Joffé, *Jordan in Transition*, London: C. Hurst & Co. Publishers, 2002.

was the next major conflict between Israel and its neighboring states. Though the war was between Israel and Egypt and Syria, other Arab nations were involved in the conflict, including Jordan. The tensions rose within the region, but at the end of the war the Arab nations involved felt liberated from their embarrassing defeat during the Six Day War, while Israel proved itself militarily within the region. Some attribute Israel's military position in this war to the realization by many Arab nations that Israel cannot be easily defeated and thus peace talks are a necessary step in dealing with the new state.[30] The Yom Kippur war is considered a direct antecedent of the Camp David Accords.[31]

The Camp David Accords, signed in 1978, by Egypt and Israel led directly to the Israel-Egypt (Egypt-Israel) Peace Treaty of 1979. The main tenants of this treaty included the mutual recognition of each country by one another, the withdrawal of Israeli troops from the Sinai Peninsula and the return of the land to Egyptian territory, and more importantly, for the context at hand in this paper, was the recognition of the Gulf of Aqaba as an international waterway—meaning ships of any nation have the right to safe passage through the gulf.[32]

The First Intifada is the next notable political conflict in the region. The conflict began with a spontaneous collective popular resistance by Palestinians within the West Bank and Gaza; it lasted from 1987-1993. During this time there was much strife between Palestinians and Israelis. There were numerous terrorist attacks; many people were killed and injured on both sides. The "outcome" of the First Intifada was that more international attention was accorded to the conflict between Israel and Palestine. Israel also began negotiating with the Palestinians at the end of the First Intifada, thus in someway politically recognizing their autonomy from the State of Israel.[33] The Oslo Accords (also known as the Declaration of Principles on Interim Self-Governing Arrangements), a direct extension from the Madrid Conference (1991) were secretly agreed upon in Oslo on August 20, 1993 and later signed in Washington D.C. on September 13, 1993. In the

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[30] "Israel 1967-1991, Camp David 1979," Palestine Facts, http://www.palestinefacts.org/pf_1967to1991_egypt_campdavid_1978.php

[31] "The Legacy of Camp David, 1979-2009," The Middle East Institute, Washington, D.C. http://www.mei.edu/Portals/0/Publications/Legacy-Camp-David.pdf, 50.

[32] "Peace Treaty Between Israel and Egypt, March 26, 1979," Israel Ministry of Foreign Affairs. http://www.mfa.gov.il/MFA/Peace%20Process/Guide%20to%20the%20Peace%20Process/Israel-Egypt%20Peace%20Treaty

[33] Rashmee Roshan Lall, "First intifada: Little rocks that cobbled an uprising [Special Report]," The Times of India, June 28, 2010. http://timesofindiaindiatimes.com/articleshow/5626230.cms

accords, Israel and the PLO agreed upon mutual recognition, an agenda for Palestinian self-governance (starting with Gaza and Jericho), and set plans for the forthcoming details on Palestinian self-governance.[34]

While the Oslo Accords were hailed as a momentous occasion, and indeed they were, the terrorist acts and settlement construction continued and the agreed upon actions of each state showed only partial progress.[35]

On October 26, 1994 Israel and Jordan signed a peace treaty between their two nations. The peace treaty set agreements as to boundary demarcations, water issues, police cooperation, environmental issues, mutual border crossings, and six territorial maps.[36] Politically, this agreement helped the Jordanian government to establish itself within the region, and to cement its borders, as well as distance itself from a joint Palestinian-Jordanian state (not to mention economic motivations). It also helped Jordan in obtaining water rights from shared resources with Israel (this will be expanded upon in the section to come). For Israel, the treaty helped to establish its presence within the region—recognition by another Arab state—and helped to ensure the tranquility of its eastern border with Jordan. The politics of this treaty suited both Israel and Jordan, but brought anxiety to the Palestinian nation because it "undermined Palestinian authority and its prospects for development…the position of the Palestinian leadership was weak, because it had earlier signed an agreement with Israel that had given it far less than Jordan had now received."[37]

In September of 1995, the Palestinians and Israelis signed Oslo II, and again it set forth negotiated agreements and goals to put into praxis, but without much progress in reality—neither party was obligated to "permanent status". Most notably, the agreement did recognize a Palestinian Interim Self-Government Authority, and redeployed Israeli troops, withdrawing from heavily populated Palestinian territories.[38]

The Protocol Concerning the Redeployment in Hebron took place in January 1997

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[34] Avi Shlaim, The Oslo Accord, *Journal of Palestine Studies* 23, no. 3 (Spring 1994): 24-40

[35] Joseph C Harsch, "Salvaging the Oslo accord," *Christian Science Monitor*, March 23, 1995, 87, no. 81.

[36] "Israel-Jordan Peace Treaty," Israel Ministry of Foreign Affairs, http://www.mfa.gov.il/MFA/Peace%20Process/Guide%20to%20the%20Peace%20Process/Main%20Points%20of%20Israel-Jordan%20Peace%20Treaty

[37] Ali Jarbawi, "The Triangle of Conflict," *Foreign Policy*, Fall95, no. 100: 11.

[38] "The Oslo Interim Agreement, Septermber 28, 1995," MidEast Web, http://www.mideastweb.org/meosint.htm

and was a positive step for the Palestinians in that Israel was to pull troops out from Hebron and other territories within the West Bank.[39] This quelled some suspicion of Israel's commitment to redeployment as agreed upon in the Oslo Accords, but did not cease the violence in the region. Terrorist attacks continued in Israel and on September 28, 2000 the Second Intifada, also known as the Al-Aqsa Intifada began. The Second Intifada is a continuation of the sentiments left from the first, which were not appeased during the Oslo Accords process. The aggrieved militant Palestinian organizations began to launch terrorist assaults on Israel, while Israel retaliated militarily and otherwise (i.e. taking prisoner's and imposing curfews). The end of the Second Intifada is a much-disputed fact. Some place it at various points in 2004 (the Death of Arafat)[40], some in 2005 (Sharm Al-Sheikh truce talks; the Israeli disengagement from Gaza), others believe that the war with Gaza in December of 2008 ("Operation Cast Lead") is the latest event under the Second Intifada umbrella. However considered, it is significant in demonstrating the tension that still exists between Palestinian and Israeli society and their governments. It is necessary to mention that, during the Second Intifada, Israel began construction of the separation wall between the West Bank and Israel, which has been , and continues to be, a main source of contention between the two states and societies.

1.4 Water Politics

In addition to the military politics of the region, water plays an enormous role. Water, being a necessity for each human being to exist, is in scarce supply in the region and has been a constant source of contention between polities and people. The contention between Israel and Jordan, over water, goes back to the mid-20th century. The Jordan and Yarmouk Rivers cross both countries' boundaries and contribute significant amounts of water to each countries' resources.

In the 1950's, the United States attempted to create a water-sharing regime (Johnston's Unified Plan of 1955) for the riparians of the Jordan River Basin, but this did not come to fruition due to the political hostilities present. The relationships of the

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[39] "Protocol Concerning the Redeployment in Hebron," U.S. Embassy Israel, January 17, 1997. http://usembassy-israel.org.il/publish/peace/hebron_redepl.htm

[40] Ruth Tenne, "Rising of the Oppressed: the second Intifada," *International Socialism*, no. 116. Posted 1 October, 2007. http://www.isj.org.uk/index.php4?id=384&issue=116

riparians in the Jordan River Basin, as a whole, are quite complex and have contributed to much conflict in the region. A direct contribution to the events of the Six Day War was the introduction of the National Water Carrier system in 1964 and the subsequent Arab response of the Headwater Diversion Plan—to damn the water from Syria and Lebanon before it reached Israeli territory. Israel attacked these diversion projects and this was a factor for the instigation of the Six Day War in 1967 (Jordan and Israel implicitly followed the Johnston Plan's recommendations, but this was dismantled during the Six Day War). Israel destroyed a Jordanian dam on the Yarmouk and gained territorial control over the Upper Jordan and northern shore of the Yarmouk, which is where the water intake for the dam was located. Israel also destroyed Jordanian water systems in 1969, which influenced Jordan's decisive expulsion of the PLO from its territory and the ensuing events of "Black September" in 1970. In the 1970's Israel began extracting water from the Yarmouk River, reaching 100 MCM/year during the 1980's and in combination with Syria's extractions, limited Jordan to 120-130 MCM/year.[41] Jordan and Israel also share and utilize underground aquifers in the Arava Valley for their respective settlements. The relationship between the two countries, in terms of water, was highly stressful and in 1990 King Hussein said in an interview that the only thing that could bring Jordan to war with Israel again was water.[42] The Israel-Jordan Common Agenda (September 14, 1993) helped to negotiate numerous issues between the two countries, chief among them was water. Israel and Jordan did not have much to conflict over regarding territory or other disputes; its cardinal dispute was over water allocation and rights.

Additionally, the Israel-Jordan Common Agenda helped to pave the way for the peace treaty, signed on October 26, 1994. The larger picture of the treaty was briefly discussed, but the specifics concerning the water allocations are necessary to understand in light of the possible cooperative water project at hand. The tenets of the water agreement portion of the peace treaty states that during the summer Israel is allowed to pump 12 MCM from the Yarmouk River, while Jordan receives the rest of the flow. In the winter, Israel is allowed to pump 13 MCM, while Jordan receives the rest of the flow, but concedes Israel to pump 20 MCM from the Yarmouk in return for 20 MCM transferred by

[41] Stephan Libiszewski, "Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab-Israeli Conflict," Environment and Conflicts Project, Occasional Paper no. 13, August 1995, 44.
[42] Ibid, 45.

Israel from the Jordan River Israel during the summer months. This water will come directly upstream from the Daganya dam and Jordan is responsible for the costs of the operation and maintenance, as well as a new transmission system—if it is needed in the future. In winter, Jordan is allowed to store a minimum average of 20 MCM from the Jordan River floodwater; excess floodwater that will otherwise be wasted may be utilized by both countries. Israel is allowed to maintain its current usage and Jordan should have usage equal to that amount so long as it does not harm Israel's use. Jordan is also entitled to 10 MCM of the desalinated 20 MCM from saline springs that are diverted from the Jordan River (until this was operational, Israel was to give 10 MCM from the Jordan River).

Additionally, Israel and Jordan were to coordinate efforts for Israel to supply Jordan with an additional 50 MCM/year of drinkable water. The operational systems within Israel's territory (even if to supply Jordan water) will be Israel's economic responsibility, while new systems for solely Jordanian supply will be Jordan's economic and governance responsibilities. An ease of access clause was also included at this point, in so much that Israel should not hinder personnel and equipment that Jordan may need. The two countries were obligated to jointly build a dam on the Jordan River for better flow efficiency into the King Abdullah Canal (Israel may extract 3 MCM from this storage dam).

Israel and Jordan were to build jointly operated monitoring stations so as to cooperatively protect the quality of the water, both within the Jordan River and the underground aquifers in the Arava Valley. The countries were obligated to ensure the quality of water they give to each other. Both countries were mandated to cease the disposal of municipal and industrial waste into the Jordan River within 3 years of the treaty.

In the Arava Valley, there were Israeli wells that were on Jordanian territory, these wells, while under the sovereignty of Jordan, were allowed to remain in Israeli use after the treaty. If the wells need maintenance or new drilling should need to occur, Israel will need to obtain a license from Jordan and provide them with the technical data of each well. Jordan was allowed to increase its extraction up to 10 MCM/year above what was already detailed in the treaty. The wells on Jordanian territory that supply Israeli water will continue to do so at Israel's expense and governance, while the electricity supply will be Jordan's responsibility. An ease of access clause was also included here on the Jordanian side—giving Israel ease of access to personnel and equipment.

Changes in the Yarmouk or Jordan Rivers must be mutually agreed upon. The countries are obligated to notify each other six months before any changes are to take place. All of the intricacies and maintenance of these plans should be under the jurisdiction of the Joint Water Committee—a committee formed by Israel and Jordan composed of three members from each country.

A very important, in light of the proposed project at hand, inclusion in this treaty was that under Annex II, Article VI titled "Co-operation" Jordan and Israel were obligated to undertake and exchange relevant data on water resources through the Joint Water Committee. They were also obligated to "co-operate in developing plans for purposes of increasing water supplies and improving water use efficiency, within the context of bilateral, regional or international cooperation."[43]

While this treaty was an important step in water cooperation in the region, it had multiple pitfalls. Firstly, it included only Israel and Jordan, which are only two of the five riparians of the Jordan River Basin (Lebanon, Syria, Israel, Jordan, and the Palestinian Authority). Lebanon and Syria are able to extract water upstream from Israeli and Jordanian flow territory. Secondly, the Palestinian Authority in the West Bank was not included in water allotment and concomitantly is not obligated to cease the disposal of wastewater into the Jordan River. Thirdly, the Joint Water Committee is no longer functioning and therefore cannot be responsible as it was obligated so in the treaty.

Much work needs to done on the cooperative management of the water resources in the area and many are hoping that the proposed RDC will be the answer to some of the management and water quantity issues.

As far as agreements made between Israel and the Palestinian Authority, the Oslo Accords govern the water division between the West Bank and Israel. In the West Bank, as is pertinent in this case, Israel is in control of virtually all Palestinian water. Although most of the ground aquifers (Image 7), from which Israel pumps its water, are located under Palestinian territory in the West Bank and the Jordan River runs through the West Bank, Palestinians have limited rights to this water. Palestinians are entitled to pump 20 MCM from the mountain aquifer, while the rest of their water is supplied by Israel (Mekorot). Palestinians have a right to extract 250 MCM/year (according to the Johnston

[43]"Israel-Jordan Peace Treaty Annex II, Water and Related Matters," Israeli Ministry of Foreign Affairs, http://www.mfa.gov.il/MFA/Peace%20Process/Guide%20to%20the%20Peace%20Process/IsraelJordan%20Peace%20Treaty%20Annex%20II

Plan) from the Jordan River and have been unable to do so since the Six Day War, when Israel took complete military control over the river.[44]

The reality of the water situation in the three countries is dire. Currently, Jordanians are provided with 90 liters (l) of water per capita per day, Palestinians in the West Bank use 50-70 l of water per capita per day (while the Israeli govt. says they are given 120-200 l per capita per day) and Israelis use an average of 300 l per capita per day (according to FOEME) (although the govt. puts the figure at 120-200 l).[45] The World Health Organization recommends a minimum of 50 l of water per person per day for the sole use of drinking, sanitation, food preparation and bathing.[46] This number does not include, industrial and commercial uses, ecosystem sustainability needs, energy uses, and other *wants*. This is the number for basic necessity and others like Falkenmark assert "100 liters per capita per day…[is] typical household demand in water-scarce regions."[47]

The water scarcity situation in the region is only getting worse with the depletion and pollution of existing resources and the increasing population and industrial/commercial needs. The Red Sea-Dead Conduit may provide some relief in the area of water quality, however the question remains that if it is indeed built how will the project be managed between the polities involved? As has been demonstrated, the politics of the region and the attitudes towards one another exhibit nothing other than mistrust and anxiety. If the project is built, the governance of it will need to be cooperative, but as this project is unlike any other in existence, the questions remain: how can this be done? What will the management structure look like? Will it be possible?

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[44] "Israel: 'Water is almost as difficult an issue as refugees,' says an NGO." In-Depth: Running Dry: the humanitarian impact of the global water crisis, *IRIN*. http://www.irinnews.org/InDepthMain.aspx?InDepthId=13&ReportId=61830&C ountry=Yes

[45] "Israel: 'Water is almost as difficult an issue as refugees,' says an NGO."

[46] Guy Howard and Jamie Bartram, "Domestic Water Quantity, Service Level and Health," World Health Organization (2003), http://whqlibdoc.who.int/hq/2003/WHO_SDE_WSH_ 03.02.pdf

[47] Peter Gleick, "Basic Water Requirement for Human Activities: Meeting Basic Needs," Water International, 21 (1996): 87.

2 Research Objective & Methodology

2.1 Research Objectives

My research questions address the issue of the cooperative management of the proposed Red Sea-Dead Sea Conduit (hereafter, RDC).

1. Which critical aspects ought to be included in the management structure?

2. What steps are necessary to achieve sustainable cooperative management between the three nations?

3. Can cooperative management be achieved in the context of this region?

2.2 Research Methods

I have researched and analyzed multiple cases of transboundary governance projects in order to comprehend the variety and complexity of management structures that exist. I also conducted interviews with experts in Israel, Jordan, and the West Bank (Palestinian Authority) in order to study the intricacies of how people within all sectors of society, in each of the three polities involved, feel and view the prospect of this project and its management.

To gain understanding of how transboundary projects may be governed, I have done extensive reading on the literature that exists on transboundary governance. The United Nations and its subsidiary organizations have published much information on the guidelines of transboundary management, with particular regard, in some cases, to water resources. I have also researched the existent laws that deal with transboundary water resources and international waters.

2.2.1 Literature Research: Case Studies

I have done an extensive review and analysis of other projects involving transboundary cooperation. The four projects I have found useful in terms of the RDC are The Nile Basin Initiative, The Great Lakes Basin (in the United States and Canada), the North-Western Saharan Aquifer System, and the Rio Grande Basin. These projects bare some resemblance in one way or another (political context, environmental similarity, governmental composition, etc.) to the proposed RDC project.

The Great Lakes Basin provides a great example of a positive and successful cooperative management structure between two developed countries that had a semi-conflict-ridden past. The Nile Basin Initiative shows an example of a stalled project between countries in a conflict-ridden region. The NWSAS is an example of a successful project between developing nations that have previously engaged in conflict with one another. The last example I chose is that of the Rio Grande Basin, as it is, in my opinion, a not entirely successful cooperative management structure between two countries with a very asymmetrical relationship.

From each of these projects, I have used the relevant information as a context boundary in which to insert the information gathered from my interviews and personal communications.

2.2.2 Interviews

I conducted interviews with people from differing backgrounds in each of the three polities. My goal was to interview as many people as possible, but aiming for around 20 people, with an equal representation from each state. I initially contacted 50 individuals, and received response from about 20 total. From these 20 I was able to interview 17 individuals. My background (Jewish identity) and the university in which I am enrolled (in Israel) both make it somewhat difficult to gain access to certain people in Jordan and the West Bank.

The list of those I have been able to interview and their respective occupations are as follows:

- Eilon Adar, Professor at the Zuckerberg Institute for Water Research
- Dr. Itay Fischhendler, Professor at Hebrew University
- Dr. Ittai Gavrieli, Director of the Geological Survey of Israel
- Avi Shapira, Chairman of the National Earthquake Preparedness Committee, in the Ministry of Infrastructure in Israel
- Khaled Gsous, Engineer and Deputy Secretary General of the Jordan Valley Authority
- Mousa Dafi Al-Jama'ani, Engineer and Secretary General of the Jordan Valley Authority
- Dr. Elias Salameh, Professor of Geology at Jordan University

- Dr. Samer Talozi, Assistant Professor of Engineering at Jordan University of Science and Technology
- Dr. Ron Avni, Geologist, University Comptroller at Ben Gurion University
- Dr. Amjad Aliewi, Director General of the House of Water and Environment in Ramallah, PA
- Dr. Ayman Rabi, Executive Director of the Palestinian Hydrology Group
- Basema Bashir, Engineer at the Palestinian Hydrology Group now in the Palestinian Water Authority
- Mr. Abdel Rahman Sultan, Deputy Director of Ecopeace-Friend of the Earth Middle East in Jordan
- Dr. Hanan Ginat, Geologist and Science Director of the Dead Sea and Arava Science Center
- Mira Edelstein, Friend of the Earth Middle East Tel Aviv Campaigner for Rehabilitation of the Jordan River
- Nader Al-Khateeb, Director of Friends of the Earth Middle East in Palestine
- Yusuf Awayes, Engineer at the Palestinian Water Authority.

I used qualitative interview methods. I prepared a list of questions, which are included below, and allowed the interviewees to talk freely about the topics. At times they answered the questions in the manner I was aiming towards, at other times they talked around the topics. They were all helpful in one way or another and provided me with useful information.

Interview Questions

1. What do you see as the main goals of the project?
2. What appears to be the biggest obstacle?
3. What are the most important aspects of the project for each nation?
4. What are the constraints in receiving approval (locally, national, internationally)?
5. What do you see as possible national or international hindrances?
6. What are all the benefits and possible negative outcomes from the project?
7. How do you see the project being governed?
8. What do you see as possible causes for non-cooperation?
9. Who will deal with practical problems that may go wrong?
10. How do you think the water will be distributed to Israel and the West Bank (in

terms of the route), which do you think is better?

11. Will the project bring political peace or must peace come before the project?
12. What other cooperative projects have been conducted between the nations involved, have they been successful and why?

In my interviews, I did not ask all of the above questions. I let the respondents speak freely and at times they would answer multiple questions from my prompt of asking one. Other times the interviewee did not respond to the question I asked and I needed to ask it a different way. Some of the questions above may seem redundant, but at times it was necessary to ask for the same information with different phrasing. Most of the respondents answered about 6 core questions, which are: 1,2,3,6,7,11.

3 Results

3.1 Literature Research Results: Selected Case Studies

As there is a dearth of information written on the management of the proposed Red Sea-Dead Sea Conduit, this section aims to present the background information written about the management of transboundary projects with specific examples. Although this information is not tailored to the specific project at hand, which is indeed the first of its kind requiring unique aspects of approach, the information that is attainable will help to expose the possibilities and trials and errors of past examples of transboundary cooperation.

Transboundary water cooperation projects have taken place all over the world, from China to the United States, throughout Africa and Europe. Accordingly, international organizations like the United Nations (and their subsidiary counterparts, i.e. UNW-DPC, UNESCO, etc.), the Global Environment Facility, and others have tried to aid in the management and publication of the inner-workings of transboundary water cooperation attempts. Throughout the numerous attempts and successes at transboundary water cooperation there are a few cases, which I would like to consider specifically and in depth in order to aid in the understanding of these complicated projects in order to apply the lessons learned to the proposed RDC project at hand. These projects are: The Great Lakes Basin, The Nile Basin Initiative, The North-Western Sahara Aquifer System, and the Rio Grande Basin.

3.1.1 The Great Lakes Basin Case

3.1.1.1 The Great Lakes Basin Context

The Great Lakes Basin is a system of transboundary lakes that lie both within the United States and within Canada. The Great Lakes of North America—Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario—occupy 245,759 square kilometers in area and contain almost 20% of the world's fresh water resources. They hold 22,809 cubic kilometers of water, of which less than one percent is renewed annually with precipitation, surface runoff, and groundwater inflow. More than 40 million people get their drinking water from the Great Lakes Basin and there is also heavily reliant agriculture

and industry in the region.[48] The lakes are also utilized for shipping, recreation, and energy generation.

The vital component that the basin plays in the lives of so many humans, not to mention other flora and fauna, necessitates the effective and equitable management of the resource between the U.S. and Canada. The lakes make up part of the border between the two countries and occupy land in one province, on the Canadian side of the border, and eight states within the U.S. (see Image 6). The basin crosses many local, regional, and state jurisdictions and for this reason a comprehensive governance institution was deemed necessary to ensure water quality and quantity within the region.

Due to the threats posed to the Great Lakes Basin from industrial pollution, non-indigenous species, development schemes, water transfers, population increases, and other impingements on the current state of the Great Lakes, a sense of urgency evolved amongst the public for a "renewed sense of shared purpose and greater institutional capacity to coordinate and integrate roles, responsibilities and decision making to provide greater accountability among all governments."[49]

The contemporary interest in joint management stems from a longer history, dating back to the turn of the 20th century when disputes over boundary waters in the Great Lakes were taking place between the U.S. and Great Britain. In 1903 the International Waterways Commission was established and in 1909 the Boundary Waters Treaty was signed (with the later succession of Great Britain's rights and obligations under the treaty to Canada). In the treaty, disputes over waterways were settled, as well as limitations and principles set for pollution, navigation, environmental and transboundary issues. Most importantly, however, was the creation of the International Joint Commission (IJC).

The International Joint Commission is a unique institution that aims to seek the common interest of both the United States and Canada in matters involving the transboundary waters of the Great Lake Basin.

It not only offers the two countries a flexible set of mechanisms to help

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[48] "A Guide to the Great Lakes Water Quality Agreement; Background for the 2006 Governmental Review," International Joint Commission, June 2005. http://www.ijc.org/en/publications/rpts.htm, iv.

[49] Murray Clamen, "Governance and Institutional Arrangements in the Great Lakes Basin," In *Proceedings of the International Workshop on Institutional Capacity Development in Transboundary Basins: Lessons learned from practical experience*, ed. Reza Ardakanian and Charlotte van der Schaaf, Bornheim, Germany: UN-Water Decade Programme on Capacity Building, 39.

> manage their relationship in the transboundary region, but also provides them with the assurance that it will reflect the shared system of principles and values recognized in the treaty.[50]

The IJC is composed of six commissioners, three from each country in equal representation. The United States commissioners are appointed by the President and confirmed by the Senate, while the Governor General-in-Council appoints the Canadian commissioners. An important aspect of the occupation of the commissioners within the IJC is that they serve within their personal and professional capacities, without an agenda explicated by their respective governments. "The IJC acts as a unitary body and operates by consensus."[51]

The IJC has two major responsibilities: one is to act as a "quasi-judicial body deciding on applications for projects in boundary waters"[52], and the second is to "study and recommend solutions to transboundary issues, when asked by the national governments."[53] Under the quasi-judicial responsibilities, the IJC can approve projects that affect the flow or level of boundary waters and it maintains the jurisdiction over the project afterward in case of future necessary adaptations. The IJC appoints Boards of Control to oversee the projects. The boards are binational and report regularly to the IJC. The boards ensure the confidence of the public and the government that the projects are in accordance with the Boundary Waters Treaty.[54]

The second responsibility, the requests by the governments, termed as "references," also usually result in the creation of a binational board by the IJC. The board is composed of an equal number of experts from each country and they report to the IJC. The reports are advisory, not binding, for the governments. The experts conduct research in their fields of expertise without partiality to an organization. They also allow the public to comment on their research and findings. These important facets of the "references" process aid in the "likelihood that IJC reports will be favorably received and acted upon by governments."[55]

The IJC has conducted many studies on different issues within the Great Lakes Basin

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[50] Ibid, 40.
[51] Ibid, 40.
[52] "Boundary Waters Treaty Centennial Edition," International Joint Commission, Annual Report for 2008. http://www.ijc.org/en/publications/rpts.htm, 8.
[53] Ibid, 9.
[54] Clamen, 40.
[55] Clamen, 41.

and some have led to new agreements, such as the Great Lakes Water Quality Agreement (1972), as well as new governance mechanisms and oversight responsibilities. In these new agreements and governance mechanisms, new institutions have been established which help to manage different aspects of the Great Lakes Basin, *inter alia* water flow over Niagra Falls for multiple purposes (The Niagra Treaty of 1950), fisheries and invasive species (United States-Canada Convention on Great Lakes Fisheries of 1955), the protection and restoration of water quality (The Great Lakes Water Quality Agreements of 1972, 1978, and 1987), and water diversion issues (The Great Lakes Charter of 1985 and Annex 2001).

The Great Lakes Water Quality Agreement of 1978 helped to change the paradigm of thought, in terms of the governance of the basin, to an "ecosystem approach." An ecosystem approach is hard to define in a concise manner, but essentially asserts that

> An ecosystem approach reorients the boundaries that traditionally have defined our management of ecosystems. It emphasizes a systemic approach, recognizing that ecosystems function as whole entities and need to be managed as such, not in pieces. Thus it looks beyond traditional jurisdictional boundaries, since ecosystems often cross state and national lines.[56]

The agreement of 1987 recognized the autonomy of each nation in their legislative and administrative structures, with respect to research and monitoring, which helped to reinforce cooperation between parties and levels of government *within* each nation. The IJC also established numerous boards under this agreement to help it meet its responsibilities. The Great Lakes Charter of 1985 was progressive in its obligation of the signatories to "develop and maintain a common data and information base."[57] However, this was not a legally binding act.

In addition to these progressive measures, which resulted from the agreements made by the IJC throughout the century of its existence, the IJC is also required to report, biennially, to the governments. These reports are done through biennial, as well as special reports, which can be openly accessed by the public. The IJC also holds biennial public meetings, at which IJC institutions, government representatives and individuals are able to express themselves.

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[56] "A Guide to World Resources 2000-2001, People and Ecosystems: The Fraying Web of Life," World Resources Institute, Washington, D.C. 2000, 226.
[57] Clamen, 43.

The institutional structure can, at times, be confusing and those within the IJC ranks call for more clarity and effective coordination amongst its various institutions. There is always more work to be done and a better and more progressive direction to strive to attain. The IJC remains a unique institution with a multitude of knowledge to lend to new and proposed transboundary governance structures. It is for this reason, and the obvious parallels that exist, that the Great Lakes Basin and the IJC are good tools to use in the analysis and recommendation for the future management structure of the proposed Red Sea-Dead Sea Conduit.

3.1.1.2 Comparative Analysis

There are parallels between the situation involving the management of the RDC and the Great Lakes Basin. Albeit different in context and scale, the similarities between the regions exist and are worth consideration, in light of the project at hand. The politics of the Middle East are much different than those that exist in North America; however, there is an asymmetrical power relationship in both cases—between Canada and the United States, and among Israel, Jordan, and the Palestinian Authority. In North America there is asymmetry in the economic and political prowess of the United States, compared to Canada, while in the Jordan River Basin these are somewhat symptomatic problems based on the larger dispute over land claims and resource rights.

While North America has a greater abundance of water resources along the Canadian-United States border, dispute or conflict over water-use does occur; likewise conflict over water resources has often resulted in the Jordan River Basin region. The experience with conflicting uses of water in the Great Lakes has led to mediation and conflict resolution, some of which is applicable with respect to Jordan, Israel, and the Palestinian Authority. The complexity of the transboundary water issues in the Great Lakes region produced the equally complex and unique model of governance of the IJC. This model has many lessons, which may be applied to future cooperative management of transboundary waters in the Jordan Basin region and the proposed RDC project.

One of the major reasons for the success of the IJC and cooperative management, between the U.S. and Canada, stems from agreement on the goals and principles guiding

their cooperation before venturing into a joint project.[58] It is critical to have an agreement between parties on priorities, decision-making tactics, and other management eventualities in order that future cooperations be commensurate with each parties stated goals and to prevent future conflicts arising from differing ideas and understandings. In the case of the IJC, the Boundary Water Treaty (1909) was such a prior agreement.

The Boundary Water Treaty established where the IJC's jurisdiction lies within the Great Lakes Basin. It also established priorities as far as different water-uses and principles with which to settle disputes over competing uses. The agreement also provides for flexibility within certain limitations so that new or novel situations may be dealt with effectively.

These characteristics of the agreement help to provide useful details in cooperative management schemes between countries. With particular respect to the proposed RDC there are a few details, which seem to be particularly applicable. The IJC, firstly, is not a political body and while it maintains quasi-judicial powers it predominately serves as an advisory body. The recommendations of the IJC and its subsidiary boards are not binding on either party.

> While keeping a low [political] profile deprived the IJC from gaining an increased influence in its sphere of activity, it shielded it from criticism and opposition associated with a politically high profile role which would have proven detrimental to fundamental prerequisites for its successful functioning such as impartiality and credibility.[59]

This seems to be an apt position to transfer from the IJC case to that of the RDC; it would help unsure the feeling of objectivity on the part of the body managing the project and avoid national divisions within the governing body. The fact that the nature of IJC recommendations is not binding in the Great Lakes Basin may prove to be a more difficult parallel to transfer to the governance of the RDC.

Precisely due to an apolitical nature of a governance body, and the objectivity that would (hopefully) follow suit, it would seem to be a good option for creating binding decisions on the parties involved. "Good faith" or "good neighborliness" in terms of resources (water or otherwise) in the Jordan River Basin has not shown to be a confidence

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[58] David Katz, Gidon Bromberg, Nader Khatib, and Abdel Rahman Sultan, eds., "Advancing Conservation and Sustainable Development of the Dead Sea Basin-Broadening the Debate on Economic and Management Issues," Friends of the Earth Middle East, 2004, 45.
[59] Ibid, 47.

inducing understanding. While in North America, the non-binding actions of the IJC have produced positive results, this may not be the case in the lesser developed Jordan Basin Region—where binding agreements may prove necessary in order to produce needed results as well as trust on the part of the cooperating parties.

As mentioned briefly above, the commitment by the Great Lakes Charter of 1985 of both countries to a shared data and information base is more than helpful for the Great Lakes Basin; it is imperative in the case of the Middle East. One of the more frustrating aspects of the current understanding of regional resources is the discrepancies that exist between the different nations on water quantity, quality, extraction, use, and access. Taking this idea one step beyond the idea of a joint information database, joint technical forces conducting the research and retrieving the data would help to dispel disputes over water resource facts. The IJC's joint ventures, between experts from both nations in "fact-finding and formulation of objective recommendations, are of a particularly high educational value for developing a culture of international cooperation."[60] In the same vein, the IJC has established international watershed boards and encouraged an integrated approach to the management of the Great Lakes Basin. Similar to the ecosystem approach, these boards deal with water quality and quantity issues within the entire basin, not divided by the geographically arbitrary political border. With both of these measures, the IJC has created the ability to study and manage the Great Lakes Basin in a cooperative fashion that takes the entire watershed area in to account.

The personal capacities with which the commissioners on the IJC serve, not as representatives of their respective governments, is cardinal in building the confidence that a governing body is objective and impartial. In the case of the IJC, it depends on the governments financially, but this financial support does not translate to their views and commendations for water allocation and management—they strive for the objective of the "common good" and achieve decisions on a consensual basis (four of six commissioners, including at least one commissioner from each country). They also evaluate each case based on its own merits, rather than a strict top down approach, applying strict legal standards and interpretations.

One of the simplest, yet most important, examples from the IJC case that should be applied in the RDC project is that of equality between the parties involved. Each country

[60] Ibid, 48.

in the IJC is equally represented, despite the asymmetry in their relationship. Likewise, this should be applied in the RDC project, granting equal representation to Jordan, Israel, and the Palestinian Authority. On a similar notion the IJC also gives the public a participatory role in the decision-making process. They supply information and hold public forums in which the public and stakeholders can take part.

The Great Lakes Basin, while having clear differences from the RDC project and the Middle East region, holds many valuable lessons, which can be drawn upon in the analysis and creation of a management structure for the proposed RDC. The scenarios, while displaying dissonance, have many similarities. The facets enumerated above hold promise in their application to new management structures in general, but as has been demonstrated with particularly clarity in the case of the proposed RDC.

3.1.2 Nile Basin Initiative Case

3.1.2.1 Nile Basin Initiative Context

The Nile River is the longest river in the world, 6,825 km, flowing through ten different riparian countries—Ethiopia, Uganda, Eritrea, Sudan, Kenya, Tanzania, Burundi, Rwanda, Democratic Republic of the Congo, and Egypt. The Nile has many tributaries, which contribute to its waters before emptying into the Mediterranean Sea. The main sources can be grouped into two sub-regions, that of the Eastern Nile and the Equatorial Lakes Basin. The Nile is composed, mainly, of two smaller rivers—the White Nile and the Blue Nile. The White Nile flows from Lake Victoria, through Uganda and Sudan, and meets the Blue Nile in Khartoum, Sudan. The Blue Nile, which supplies the majority of the water and fertile soil to the Nile River, flows from Lake Tana in Ethiopia and through Sudan before meeting the White Nile.[61]

Providing 84 Billion Cubic Meters (BCM) of water annually, the Nile River is an irreplaceable source of water for its riparian nations.[62] About three hundred million people live within the ten riparian nations and about one hundred and sixty million of them are dependent on the Nile River and its tributaries.[63] All of the nations have agriculture-based

[61] Ana Elisa Cascão, "Power Relations, Conflict and Cooperation in the Eastern Nile River Basin," To be published in Cairo Papers in Social Science (forthcoming), American University of Cairo, 3.
[62] Ashok Swain, "The Nile River Basin Initiative: Too many Cooks, Too Little Broth," *SAIS Review* XXII no. 2 (Summer–Fall 2002): 2.
[63] Ibid, 7.

economies, which require vast amounts of water. In Egypt and Sudan, the dependency amongst the people is much higher than other the riparian nations, due to their historical and continued extraction as the majority users of the Nile River water.[64] Egypt and Sudan's entire economies and societies are based upon the unimpeded usage of high volumes of water from the Nile River. This disparity of dependence translates to a disparity in water usage. Egypt and Sudan enjoy far more of the water from the Nile than the upstream riparian nations. This has led to conflict over water and historical water agreements.

The first agreement was signed in 1929 between Sudan and Egypt (during Great Britain's colonial rule over Sudan) and allocated 48 BCM of water to Egypt and 4 BCM to Sudan.[65] The demand for water grew in Sudan and upon their independence they renegotiated the terms of the previous agreement with Egypt, forming the 1959 Agreement, which changed the allocation of Egypt and Sudan to 55.5 BCM and 18.5 BCM, respectively.[66] The Aswan Dam (which is actually two dams that cross the Nile River in Aswan) was then constructed between 1960 and 1971 to help control the annual flooding of the Nile. The Dam created Lake Nasser, which is a large water reservoir located in southern Egypt and northern Sudan. Due to the geographical/hydrological characterization of the area, the political contentions between the countries, and past, present, and future possibilities of unilateral projects on the river and its tributaries (including dams and other abstraction methods) the countries recognize the need for a basin-wide agreement and management structure.

The Nile Basin Initiative was formed in February of 1999 with the express purpose of achieving "sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin water resources."[67] Eritrea is the one exception as a riparian that did not join the NBI, but is still considered in the Nile Basin Act 2002 as a "Nile Basin State." Dialogue between the nations created agreement on the idea of developing "the river in a cooperative manner, [in order to] share substantial

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"Terms of Reference Version 08, Support Data Compilation for the Development of the Nile Basin," NBI-WRPM, July 22, 2008, 1.

[64] Cascao, "Power Relations," 6.

[65] Swain, 4.

[66] Ibid, 4.

[67] "NBI Background," Nile Basin Initiative, http://www.nilebasin.org/index.php?option=com_content&task=view&id=13&Itemid=42

socioeconomic benefits, and promote regional peace and security."[68]

The Nile Basin has been seeking a permanent river basin commission, as part of the Nile River Basin Strategic Action Program, since 1997 when work began on the establishment of the Cooperative Framework Agreement. The commission that will be formed will replace the Nile Basin Initiative, which is a transitional cooperative mechanism.[69] In 2002, at the 9th annual meeting of the Council of Ministers (which takes place in Cairo, Egypt), the riparian nations agreed to "'invest the NBI. On a transitional basis, with legal personality to perform all of the functions entrusted to it, including the power to sue and be sued, and to acquire or dispose of movable and immovable property.'"[70]

The NBI is composed of the Council of Ministers of Water Affairs of the Nile Basin Countries (NILE-COM), the Technical Advisory Committee (NILE-TAC), and the Nile Basin Secretariat (Nile-Sec). NILE-COM is the highest decision making body in the NBI and provides policy guidance. NILE-COM is composed of the Ministers of Water Affairs in all the Nile Basin Riparian Counties. The Chairperson serves for one year and the position is rotated amongst the countries. NILE-TAC assists NILE-COM with technical advice and is composed of one representative from each nation, and one alternate (a total of 18 members currently, without Eritrea). Nile-Sec assists both NILE-COM and NILE-TAC logistically. They ensure efficiency, financial management, public relations, and they lend support to the branches and their activities.

The NBI has two programs to help facilitate cooperation between nations, one is the Shared Vision Programs (SVP) and the other is the Subsidiary Action Programs (SAP). The SVP are grant-based activities that support cooperative projects aimed at fostering trust amongst riparian nations, through building an enabling environment. The SAP consists of The Eastern Nile Subsidiary Program (ENSAP) and The Nile Equatorial Lakes Subsidiary Program (NELSAP)—both deal with cooperative investment projects.[71]

This was the initial set-up of the NBI, but the Strategic Action Plan did not start in 1999, nor did it end there. In an effort to demonstrate the long and arduous process in the NBI's establishment, and work towards the establishment of a permanent commission,

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[68] Ibid.
[69] "The Nile Basin Initiative Act, 2002" http://faolex.fao.org/docs/pdf/uga80648.pdf, 1.
[70] Ibid, 1.
[71] "NBI Background."

here is a brief chronological listing of events:

In 1993, dialogue began between the riparian nations and the international community. In 1994, the World Bank, UNDP (United Nations Development Programme) and CIDA (Canadian International Development Agency) became involved in the cooperation efforts in the basin. The Nile River Basin Action Plan (NRBAP), which discussed economic development and equitable utilization of water resources, was created to present to donor communities in order to elicit funding. Plans for creation of the Cooperative Framework Agreement began in 1995. In 1998 The SVP and SAP programs were agreed upon and NILE-TAC was established. As stated previously, in 1999 the NBI was created; additionally, the adoption of its Policy Guidelines, the establishment of Nile-Sec (which is in Entebbe, Uganda), and the appointment of the first Executive Director of the NBI also took place in that year. In 2000, the NBI attended the second World Water Forum, as its first international appearance. The NELSAP and ENSAP projects were initiated and later established. In 2002, the Nile Basin Initiative Act was signed. The first SVP project was launched in 2004, and several more the following year. In 2006, the first draft of the Cooperative Framework Agreement (CFA) was finalized; the first Nile Basin Development Forum was held in Addis Ababa. The CFA negotiations and draft agreement were concluded, and the first Nile Basin Day, commemorating the establishment of the NBI, was held. The second Nile Basin Development Forum was held in 2008; the NBI Institutional Strengthening Project was launched. In 2009, several SVP's were phased-out and the CFA was expected to be signed; however, this did not happen. In 2010, seven out of the nine countries met and agreed on the signing and progress of the CFA, while Egypt and Sudan still claim that the agreement does not reflect their views.[72]

Since its inception, the NBI has come a long way, but it is still a difficult process to agree on terms between the countries, with particular regard to the CFA. The CFA has been a continuous stalling point between Egypt and Sudan and the remaining seven riparian nations. This stems from their historic and present uses of vast amounts of Nile River water and the potential for reduction in this amount with the signing of the CFA due

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[72] Ana Elisa Cascão, "Institutional Analysis of the Nile Basin Initiative: What worked, what did not work and what are the emerging options?" September 2009, Forthcoming publication, 25-26.
"Minister of Water Affairs End Extraordinary Meeting over the Cooperative Framework Agreement," Nile Basin Initiative, 14 April 2010.
http://www.nilebasin.org/index.php?option=com_content&task=view&id=161&Itemid=102

to language, which guarantees "water security" to the riparian nations.[73] Egypt and Sudan, the downstream riparians, claim, "'historical rights and prior use'…based on the bilateral 1959 Agreement.[74] Egypt and Sudan are not in favor of any renegotiation or reallocation of water from the Nile River that would entitle them to less water than they currently use. At the same time, it is imperative to the upstream riparians that the water allocations from past agreements (i.e. the 1959 Agreement) be renegotiated in order to "achieve a multilateral and all-inclusive new Nile agreement which would establish unambiguous volumetric allocations for all the riparian states."[75]

While the CFA is still being negotiated, the NBI has been a long time in the working and there are many lessons to be learned from the formation of the NBI and the cooperation between the riparian nations. The process of forming the NBI is translatable to the RDC for many reasons—the situation is similar in terms of conflict, water availability and water stress, the asymmetrical relationships between the countries, and their continued dispute over historical water agreements. This applicability of the NBI case to the RDC will be expounded below.

3.1.2.2 Comparative Analysis

The Nile River Basin (hereafter NRB) is home to ten riparian nations. These nations all depend on the water from the Nile or its tributaries. The agriculture-based economies of the riparian nations make the water important, not just for domestic use, but for the domestic economy, GDP, and food security as well. The Jordan River Basin is home to five riparian nations, three of which are included in the proposed RDC project. The countries also depend on the water from the Jordan River, and the water that will come from the proposed RDC for domestic and agricultural use. The economies and societies in the Jordan River Basin are very much tied to agriculture.

The downstream part of the NRB region is located predominately in drylands, with minimal areas (pretty much exclusively in Ethiopia) that have a range that extends into the dry sub-humid and humid classifications. Concerning Sudan and Egypt, agriculture must be irrigation-fed and cannot depend on rainfall. Likewise, the three polities (Jordan, Israel,

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[73] Ana Elisa Cascão, "Ambiguity as Strategy in Transboundary River Negotiations: the case of the Nile River Basin," Paper presented to II Nile Basin Development Forum in Khartoum, Sudan, November 2008, 3.
[74] Ibid, 4.
[75] Ibid, 5.

and the West Bank), involved in the proposed RDC project, have a predominately arid to semi-arid climate as well. Thus, both regions rely heavily on the irrigation water and not on the decreasing annual rainfall (if any) in the region.

The dependence on the NRB waters coupled with the low annual rainfall and ensuing water scarcity in the region produces a situation in which the countries are completely dependent on the Nile water without other alternative natural sources. In addition to, and perhaps possibly as a result of, this dependence, "the basin has been characterised, historically, by the existence of low-level (mainly diplomatic) conflict."[76] As a function of the water scarcity situation (as has been demonstrated in the 1.3 and 1.4 sections of this work), as well as other contributing factors, the Jordan River Basin region is also characterized by conflict (not necessarily *low-level*, as in the NRB*)*.

Both regions share in the asymmetrical relationships between the countries, in terms of political conflicts (i.e. Ethiopia and Eritrea; Israel and the occupied territories of the West Bank, etc.), water usage (i.e. downstream vs. upstream riparians in the NRB; Israel vs. Jordan and the occupied territories in the West Bank), as well as economic prowess (Egypt vs. the other riparian nations; Israel vs. Jordan and the West Bank).[77] This asymmetry in power is coupled with historic, disputed and inequitable, water agreements between nations within the NRB and the Jordan River Basin. In the case of the NRB, the 1929 and 1959 Agreements (discussed in the section 3.1.2.1 of this thesis) contain inequitable allocations of water to Egypt and Sudan and exclude the upstream riparians. In the Jordan River Basin, the Oslo Accords and the intended versus actual outcomes of the water allotments in Israel and the West Bank (as discussed in the 1.4 section of this work) demonstrate this asymmetry.

One of the major delays in gaining approval of the CFA is the reluctance to renegotiate the historic agreements and their water allocations, on the part of Egypt. This is a lesson that needs to be learned from in order to apply to the RDC. Egypt's opposition to renegotiation is clear (as demonstrated in the above 3.1.2.1 section), but in order for regional cooperation to succeed, the parties must feel that an equitable agreement has been

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[76] Cascao, "Institutional Analysis," 10.

[77] "Country Comparison: GDP (Purchasing Power Parity)," The World Factbook, Central Intelligence Agency, https://www.cia.gov/library/publications/the-world-factbook/rankorder/2001rank.html?countryName=Egypt&countryCode=eg&regionCode=af&rank=27#eg

Daene C. McKinney, "Transboundary Water Challenges: Case Studies," University of Texas at Austin Center for Research in Water Resources, 48.

signed. Somewhat different, but still applicable in the RDC case, the principle holds that an equitable agreement of water allocations must be reached by all of the parties involved in order to have a successful and sustainable cooperative management structure. This agreement must come prior to the introduction of a cooperatively managed project.

Another error in judgment in terms of the CFA and its seeking approval is the use of ambiguous language in the treaty. The use of the term "water security" is vague and made many of the nations wary to sign the agreement. The Agreement states: "' (…) the Nile Basin States therefore agree, in a spirit of cooperation, to work together to assure that all states achieve and sustain water security and not to significantly affect the water security of any other Nile Basin State.'"[78] The term "water security" was introduced into the treaty after the countries had come to a stalemate in terms of negotiations with each other. The use of "water security" in the agreement was under the guiding principle of "constructive ambiguity."[79] The upstream countries were unwilling to sign the agreement with such legal ambiguity and wanted clearer language, while the downstream countries refused to include language referencing the 1959 Agreement between Egypt and Sudan and were quite inflexible in the negotiations.[80] The use of ambiguous language, aimed at cooperation and a break-through from the stalled agreement negotiations, served to bring the negotiations to a complete halt. The negotiations moved from the technical and ministerial level to the high political level, between the heads of government, and are now at a standstill with no clear deadline for ratification. The use of ambiguity in this case turned from the "constructive" idea to a "destructive" reality.

A similar, "destructive", ambiguity was noted in the peace treaty between Jordan and Israel in 1994. In this case, the ambiguities in the treaty caused low-level conflict, with the possibility of escalation, over the water allocations, sources, and economic responsibilities. Itay Fischhendler used this case to demonstrate the progression of "constructive" ambiguity towards a "destructive" reality during implementation of treaty agreements.[81] It is due to the negative experience in the NBI and the noted prior conflicts in the Jordan Basin River that ambiguity within the agreement between the beneficiary countries from the RDC is something that must be addressed and resolved, and never used as a tool. Any

[78] Cascao, "Institutional Analysis," 9.
[79] Itay Fischhendler, "When Ambiguity in Treaty Design Becomes Destructive: A Study of Transboundary Water," *Global Environmental Politics* 8, no.1, February 2008, 1.
[80] Cascao, "Ambiguity," 10.
[81] Fischhendler, "Ambiguity."

ambiguity in their agreement to work together or in the management structure could prove fatal to the cooperative project at hand. The success of the management structure of the proposed RDC necessitates a clear delineation of responsibilities, oversight, and allocation.

A positive attribute of the NBI case, which may be applied to the RDC project, is the action of incentives, both external and internal. In the NBI case, external donors helped to foster cooperation between the nations involved. The external (international community) incentives consist of funding opportunities. The incentives that come from the external donors are investments and financial assistance with the project, institutional support, and the use of the Nile Basin as a model of transboundary water management.[82] The internal (countries within the NRB) incentives are a bit more complex. The riparian nations as a whole seek

> international funding for hydraulic projects in their national territories, increased opportunities to reach a multilateral and equitable legal agreement in the Basin, to counter-balance their relative power in regional hydropolitics and to achieve some control over shared water resources.[83]

The downstream riparians are especially interested in forming a cooperative management body to quell the possibility of unilateral water diversion projects in the upstream countries. They also look forward to water conservation projects in the basin, and the ensuing benefits of a possible increase in water supply, gaining a regional reputation, gaining acknowledgement of past agreements, control data and information, and increase regional political relations.[84] The upstream nations incentives for cooperation are largely the same as the downstream; they want to increase the equitable usage of water within the basin and share in the benefits of the NRB water as well. Their incentives are access to international funding, creation of a new legal agreement, counter-balancing power relations, achieving some control over Nile waters, and gaining economic benefits.[85]

Likewise, in the RDC the external (international) donor incentives exist as well as the internal incentives of the project's beneficiaries. The World Bank and other countries have pledged funds for the existent feasibility study and, dependent on the outcome, the countries are hopeful for outside funding help on completing the project. The project will

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[82] Ana Elisa Cascão, "Political Economy of Water Resources Management and Allocation in the Eastern Nile River Basin," (PhD diss., University of London, 2009), 288.
[83] Ibid, 287.
[84] Ibid, 287-288.
[85] Ibid, 288.

be immensely expensive, more than the countries can fund on their own and it is necessary for them to gain international funding help. Therefore cooperation is in their best interests in order for them to gain the funding necessary for the project.

Within the Jordan River Basin, the countries have shared incentives for the project. They want to increase political relations and political stability of the region. They need more water, and hence new water resources, for use within their existing infrastructure. The countries also have an interest in protecting the Dead Sea and restoring its historical water level of the 1950's. These goals are all expressed in the Term of Reference of the project, which was published by the World Bank, at the request of the three nations. The nations also have their own incentives, or have prioritized these incentives in their internal national logic (these will be enumerated later in section 3.2 of this thesis).

In the NBI case, there have been numerous confidence building techniques employed to help instill trust between the countries in the NRB. This was seen as imperative to moving beyond the conflict that existed/exists within the region. In the mid-1990's confidence building activities began with the support and funding of CIDA and the UNDP; in 2005 an SVP was initiated entitled "Confidence Building and Stakeholders Involvement." These programs have been successful in getting people from all levels of society and from all of the riparian nations to get together for the Nile 2002 Conferences (1993-2004), NILE-COM and NILE-TAC meetings, The Nile Basin Discourse, and the Nile Basin Development Forum (began in 2006). These meetings were instrumental in getting the actors together and produced positive dialogue between Egypt and Ethiopia, which were two of the countries most at odds.[86] The institutions that were created to help manage the NBI project also helped to foster communication between people from the different nations, as they began to work together in the same office. A large success can be contributed to the inception of NILE-TAC in 1998, before the NBI was even established. This move helped to bring people from the different countries together to produce real data and manage the technical aspects of the project before the NBI got off the ground.

These confidence building and cooperative measures are imperative, but have not solved disagreements between all of the nations involved. It is important to note that these measures have produced more interaction in general, and more positive interaction between the nations. Confidence building is noted by some as "the most important

[86] H.Erlich, *The Cross and the River: Ethiopia, Egypt, and the Nile*. Boulder, Colorado: Lynne Rienner Publishers, 2002.

achievement of the cooperation process."[87]

This is an important and transferable aspect of the NBI. Concerning the RDC, the introduction of physical committees and programs that would require people from Jordan, Israel, and the West Bank to work together is an imperative part of creating a cooperatively managed project. Such programs would begin before the project is put into place, facilitating people from all of the nations to meet in an academic or non-political arena, which would help to instill understanding and trust. This could be done in a variety of manners, e.g. creating task forces to gather data, holding stakeholder meetings, and creating community organizations—festive "water days" or public fora in which to discuss opinions and concerns. There have been minimal attempts to do this in the current feasibility study of the project.

The physical structure of the organization is also important. In the NBI there are multiple bodies, which govern the project (NILE-COM, NILE-TAC, and Nile-Sec). The equality in representation within the structure is an important idea to use in transboundary water cases, and in the RDC project specifically. As was discussed in the Great Lakes Basin case as well, equal representation in the governing body helps to assuage the feelings of asymmetry between the countries, as well as foster more confidence in the process by giving all of the polities' equal footing in the decision-making process.

A last positive note to mention about the NBI is the idea of creating sub-basin organizations, as proposed by Ashok Swain.[88] This could hold promise for the entirety of the Jordan River Basin, but does not necessarily make sense in this project. The inclusion of the three polities is essential in every process of creating the RDC in order to quell mistrust on the part of any of the countries (particularly for the Palestinians, as they initially struggled to be included in the project). The sub-basin as a starting point is a potentially useful idea in the Jordan River Basin region for future cooperative management plans (this will be discussed briefly in the 4.3 section).

The promise of the NBI's trials and errors/successes should prove useful for many transboundary water management scenarios. A warning, elicited by Swain that, "By failing to address the core issues and projecting a superficial cooperation involving a larger number of actors, the NBI is very likely to fail,"[89] is quite apt and should be noted.

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[87] Cascao, "Political Economy," 292.
[88] Swain, 11.
[89] Ibid, 14.

Agreement by the riparian nations is essential, and so too will be if the RDC project is brought to fruition.

> The failure of [the] 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.[90]

This holds for the RDC as well. If the project is not successful, unilateral projects will be taken up by Jordan in order to secure more water. This could produce a breakdown of communication between the countries and possible increased conflict. The necessity to go about the implementation and management of the RDC in a positive and cooperatively successful manner cannot be overstated.

3.1.3 North-Western Saharan Aquifer System Case

3.1.3.1 North-Western Saharan Aquifer System Context

The third case that merits an analysis and shows promising parallels to the RDC case, in terms of borrowing from the cooperative management of a transboundary project, is the North-Western Sahara Aquifer System (NWSAS). The NWSAS lies beneath the three neighboring countries of Algeria, Libya, and Tunisia. The aquifer system spans more than 1 million km^2; 60% (700,000 km^2) lies in Algeria, 30% (250,000 km^2) in Libya, and 10% (80,000 km^2) in Tunisia.[91] The aquifer system is composed of two layers: the Intercalary Continental and the Terminal Complex. The former spans the greatest area and is the thickest and deepest layer, while the latter is smaller and heavily exploited, particularly in the Algero-Tunisian Chotts region.[92] The aquifer does not recharge in any significant amount annually; it receives little water due to the Saharan climate.[93] "The NWSAS is a

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[90] Ibid, 14.

[91] "The North West Sahara Aquifer System, an example of shared management of a cross border basin," United Nations CSD WAND. Submitted in Local Actions at 4th World Water Forum (2006). http://www.csdwand.net/data/sheet.asp?cn=Algeria&fn=LA0685

[92] "Background: North-Western Sahara Aquifer System," OSS/NWSAS, http://nwsas.iwlearn.org/about/background

[93] Mustapha Besbes, and others, "Conceptual Framework of the North Western Sahara Aquifer System," Observatoire du Sahara et du Sahel (OSS), Proceedings of the International Workshops, Tripoli, Libya, 2-4 June 2002, 1.

non-renewable resource."[94] Though there is a large reserve in the aquifer, the salinity of the water is a main concern as exploitation is increased in the three nations. Increased salinity in the groundwater, particularly in the Terminal Complex in the Chotts Region (Image 10), is an irreversible state that would affect the people (more than 4 million)[95] living throughout the region, the hydrologic integrity of the aquifer system, and the ecology of the area. Besides water salinity, there is also concern for "artesianism reduction, natural discharge depletion, drawdown, or interferences between countries"; this could seriously threaten the "sustainability of socio-economic development of the area."[96]

The three countries have chosen to work together to produce a positive outcome out of a dire situation; however, the countries have not always been so cooperative. The political relations between the three countries have not always been peaceful. Following Algerian independence in 1962, relations between Algeria and Tunisia (as well as Morocco) became somewhat tenuous throughout the 1970's, but on the whole, relations between the two nations have been amiable.[97] They have worked together on joint economic ventures. The same cannot be said for relations between Algeria and Libya, however. Libya has oft sided with Morocco, which has been in opposition with Algeria for a good portion of Algeria's independent history due to discrepancies over the politics of the Western Sahara. Tunisia generally sided with Algeria when it has come to political conflict in the region. Relations improved between the nations through the declaration of the Treaty of Fraternity and Concord, originating in 1983, which helped to coalesce the Maghrib region into an inter-Maghrib alliance. The Union du Mahgreb, UMA Treaty, was signed in Marrakech in 1989 by Algeria, Tunisia, Libya, Mauritania, and Morocco and provided a non-structured framework for cooperation between the countries within the region.[98]

The cooperative treaty framework helped to pave the way for the implementation of

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[94] "Report and Recommendation of the President of IFAD to the Executive Board on Proposed Technical Assistance Grants for Agricultural Research and Training by a Non-CGIAR-Supported International Centre," International Fund for Agricultural Development, July 29, 1998, 7.
[95] "Medium-Sized Project Brief," Global Environment Facility, http://www.iwlearn.net/iw-projects/Msp_112799492025/project_doc/nw-sahara-aquifer-project-brief.pdf, 11.
[96] George De Gooijer, and others, "Innovations in Groundwater Governance in the MENA Region," Middle East North Africa Seminar Report from World Water Week 2008, Stockholm International Water Institute, Stockholm, March 2009, 17.
[97] "The Maghrib." Country Studies Series by Federal Research Division of the Library of Congress. http://www.country-data.com/cgi-bin/query/r-460.html
[98] Ibid.

projects like the joint management of the NWSAS. The NWSAS project aims to protect the water resource, particularly the recharge areas and humid zone ecosystems related to the aquifer. The project takes an approach that necessitates the improvement of knowledge of the aquifer and its related ecosystems as well as requires a consultation mechanism at the hydrogeological basin level. The management aims cover the protection of the arid and semi-arid areas that are presently affected by desertification.[99] The project hopes to employ a more sustainable extraction plan from the aquifer system that will not subject it to irreversibly harmful damage.[100]

There are numerous outcomes of the project; they are:

> completion of a study on the NWSAS; analysis of the legal and institutional issues surrounding management of this shared resource; completion of a management model which encompasses protection of the recharge areas and the humid zones, provides the best possible scenario for sustainably exploiting water resources, identifies indicators on sustainable resource use, both in terms of water quality and quantity; defines a water policy for the arid and semi-arid zones of the three countries that promotes protection of the recharge areas and the humid zones and sustainable use of the shared resources; establishment of a consultation mechanism to ensure sustained monitoring of water resources in the shared basin following completion of GEF funding, with funding becoming committed from non-GEF sources for the continued existence of this mechanism.[101]

The project was executed in three phases. Phase I of the project began with the development of an information-sharing framework, which helped to promote the knowledge of the basin and trust between the countries. The "Integrated Information System" is composed of a database, geographical information system and management tool.[102] This system helps to promote free data exchange between the countries. Additionally, the system provides the necessary information in order to make decisions regarding the aquifer system and the three stakeholders. With the database and the proper inputs, a model of the basin was created (and can be updated) in which to identify further research needs and to monitor the status of the aquifer.

Following the implementation of the database, the "Permanent Mechanism for the

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[99] "Regional-Protection of the North West Sahara Aquifer System (NWSAS) and related humid zones and ecosystems," Global Environment Facility, http://www.gefonline.org/projectDetails.cfm?projID=1851

[100] "Medium-Sized Project Brief," 3.

[101] Ibid, 3.

[102] "NWSAS: a Model for Joint Management of shared Water Resources," OSS,Tunis, Tunisie, 2009.

North-Western Sahara Aquifer System," a governance body that was negotiated and signed into being by all three countries, was put into place. The program for the project began in July of 1999, but the project itself was not started until 2002.[103] The initial development scheme, which expounded the database, research areas, and future evolution of this mechanism, was designed in Rome in 2002 and named the Sahara and Sahel Observatory (OSS) as the Executive Agency of the Project.[104] The steering committee, set up by OSS is comprised of various international and scientific organizations (e.g. UNESCO), as well as national bodies from all three stakeholder nations (Agence Nationale des Ressource Hydrauliques, General Water Authority, and Direction Générale Ressources en Eau).[105]

The project has proceeded in three phases. The first phase (from July 1999 to December 2002) established the information sharing database, the construction of a numerical management model, and a three-country consultation mechanism. The second phase of the project took place from 2002-2006 and the goal was to improve the knowledge of NWSAS water resources. This was done through the creation of three sub-models for three distinct areas of the basin. The second phase also included the consolidation of hydrological results through a two-fold program—studying the impact of water extraction on the environment and an outline of the socio-economic situation. The third phase, from 2007-2009, was aimed at conducting "in-depth studies of the socio-economic aspects with a view to defining viable development alternatives and ensuring the sustainability of [the] NWSAS, testing out methodologies and practices pertaining to water saving and soil quality in selected pilot zones, and bolster[ing] the NWSAS consultation mechanism by providing decision-support tools."[106]

Currently, the project has followed the schedule it set, for the most part. The first phase involved the hydrological/geological data gathering for the aquifer system (from each of the three countries) and the construction and implementation of the "Information System" (IS). The construction of this database system necessitated the homogenization of the historical records from the national databases in each country. This required the

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[103] "Presentation of NWSAS," Sahara and Sahel Observatory, O.S.S. Virutal Library, http://www.unesco.org/oss-sass/vuk/presentation_sassuk.htm

[104] "Project Factsheet", North-Western Sahara Aquifer System," OSS/NWSAS, http://nwsas.iwlearn.org/about/factseet

[105] "Project Structure," North-Western Sahara Aquifer System," OSS/NWSAS, http://nwsas.iwlearn.org/about/structure

[106] "NWSAS Project Schedule," NWSAS, OSS, http://www.oss-online.org/index.php?option=com_content&task=view&id=159&Itemid=447

codification of the data into the same program interface, which presented yet another obstacle that was overcome. The new data gathered also contributed to the nascent database. "The Information System (IS) elaboration included the diagnosis, design and realization of a common database, with the objective of making IS accessible simultaneously in the project's headquarters in each water administration for the three countries."[107] After the IS was put into practice the NWSAS Numerical Model was built to help predict future scenarios of water extraction and aquifer conservation. The fruition of the database was the initial phase of the project that allowed the trust and cooperative work between the three countries to be actualized and continue.

The second phase of the project involved the extension of the data collection from the hydrological characteristics of the area to the socio-economic and environmental aspects. This was particularly interesting because, as it was understood in their data gathering missions, the water use information from the three countries varies dramatically and is not always consistent. They used the information to highlight the main features that were important in all three countries. They used this information and the IS to set "recommendations for a sustainable NWSAS water management."[108] Additionally, the environmental risks to the various areas that compose the aquifer region were identified and recommendations were made to develop a tool to help monitor the at-risk environmental areas.

The first two phases helped to achieve the first goal of the project, "aimed at producing reliable technical elements (data, simulations…), putting in place the dialogue tools, and rendering risks more visible."[109] The second objective, "aimed at perpetuating consultation, first at the technical level, and its ownership at the political level by establishing a standing structure for harmonising development planning,"[110] was addressed in the third phase of the project.

The third phase involved the design and implementation of the "consultation mechanism" of the project. Prior to this project, scientific studies and collaborations on management had been established between two of the three countries during the 1980's

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[107] "The North-Western Sahara Aquifer System (Algeria, Tunisia, Libya): Concerted Management of a Transboundary Water Basin," OSS, Tunis 2008.
[108] Ibid.
[109] Ibid.
[110] Ibid.

and 1990's.[111] This helped to pave the way for the idea of a cooperative project; however, this project began of its own accord, with no relation to prior attempts at cooperative management.

From the beginning, the idea of the "consultation mechanism" was that it be sustainable and continue beyond the end of the project itself. This was an important goal to establish from the beginning. The constant maintenance of the IS and the Numerical Model was a first step in establishing a technical advisory body. The technical structure was developed into an independent organization, under the auspices of OSS. The details of the body were agreed upon at three different workshops held between the three countries. The final agreement was made at a fourth workshop that took place in Rome (not within one of the three countries involved). The technical structure is composed of a "Steering Committee" that includes the bodies that currently oversee water within the three nations, a "Coordination Committee" that is overseen and located at OSS, as well as an "Ad hoc Scientific Committee," which maintains the scientific "evaluation and orientation."[112] This structure was approved in 2002. After this was approved there were more workshops within each country, a meeting of the three national steering committees (2005) in Algiers, a meeting of the OSS Board of Directors (2005) in Tunis, and a final meeting in Tunis (June 10-11, 2007) in which the structure was defined and agreed upon. In November of 2007, a one-year trial began with the structure coordinator's appointment to OSS, with the funding shared equally. The structure of the "Consultation Mechanism" is expressed in Image 11.

The mechanism is still functioning, under the guidance of OSS, as it was hoped to in the initial outset of the project's inception. The project has functioned well and maintained the cooperative governance structure, as well as helped to manage the shared aquifer system. "The practice of partnership within the NWSAS project has gradually fostered mutual trust between the technical teams [of the three nations]."[113]

3.1.3.2 Comparative Analysis

The NWSAS case is an apt parallel example for the proposed RDC and the cooperative management between Jordan, Israel, and the Palestinian Authority. The

[111] Ibid.
[112] Ibid.
[113] Ibid.

contexts are similar enough to transfer the aspects of the management structure from one to the other. The NWSAS specifically details the phasing of the project, which is an important aspect to learn from and incorporate into the RDC project.

Algeria, Libya, and Tunisia currently cooperate in the management of the shared scarce resource of the NWSAS. Their history has not always been one of good relations, in fact just the opposite can be said. The three countries have, for many periods, fought one another or teamed up against one another. The national beneficiaries (Jordan, Israel, and the Palestinian Authority) of the proposed RDC have a similarly conflict-ridden past. For this initial reason, the two scenarios make a positive comparison because the cooperative management in the NWSAS case has helped the countries to move beyond their points of conflict to work together. This holds promise for the state of the relationships between Jordan, Israel, and the West Bank. Likewise, the countries in both cases (NWSAS and RDC) live in a water-scarce situation, which puts greater pressure on the shared resources and necessitates cooperative management.

The three countries of the NWSAS entered into a cooperative management framework with the help of OSS. The initial push for the scientific, technical, and institutional dialogue came from OSS, but was invited by the three nations. Similarly, the RDC is a project that is overseen by the World Bank, asked to be in this position by the three beneficiaries (Jordan, Israel, and the West Bank). The importance of a larger and international organization to help in the initial set-up stage of a project cannot be overstated. The position of an organization such as OSS or the World Bank helps to enhance project continuity, particularly when it is a collaboration of politically cold relations; they also help in securing funding for the project. International organizations have more funding at their disposal, and donors are more apt to invest in a project that is stabilized by the existence of an international organization. The NWSAS "is now a concerted operational programme carried out for and by the three countries."[114] The NWSAS is no longer managed by the OSS; it is a self-governed project, which utilizes the help of OSS in location and agreements. This is a positive example for the RDC. The RDC, too, might best be served by the oversight of an international organization for the initiation of the project and the agreement stages.

The phasing of the project itself, as well as the specifics involved, is an important

[114] "NWSAS: a Model for Joint Management."

example from which to learn. The first phase, including the data gathering and the construction of the IS as well as the NWSAS Numerical Model, provides a good tool for initial cooperation. Like that discussed in the NBI (NILE-TAC), the cooperative effort to gather data cannot be overstated. In the NWSAS, the conflicting data of each country and the feelings of mistrust towards one another could have helped to spawn further distance and conflict, but with the cooperative actions of the technical groups it was a cause for cooperation and trust building. The idea of having a shared database composed of data gathered cooperatively, and which remains accessible to all of the nations involved, is necessary in this type of project. The oversight of the management must be shared between the three nations equally; likewise they must all have access to the information.

The Numerical Model sheds light on the future possibilities within the region in regard to the aquifer system. The modeling helps to illustrate future scenarios, while the data gathered in terms of hydrology, socio-economics, and environmental risk helps to ensure that all of these aspects will be regarded in future scenarios. The three countries must plan for the future together. The RDC must function in a similar manner. The cooperative gathering of data is essential to quelling the mistrust that exists between the countries with regard to water allotment and use. Equal access to the data is also an imperative, so that each country will feel equally respected and be able to assist in the management of the project in the most effective manner. The project must also have a jointly understood goal/future.

The RDC has a somewhat phased system at the moment, with respect to feasibility study progress. The feasibility studies are ongoing and sub-divided into different categories (environmental and social, the Dead Sea modeling study, the Red Sea modeling study, study of alternatives), which will be combined in a finalized report. I believe that a phasing of the entire project will be a helpful tool in establishing trust and proper mechanisms for management. After the feasibility study is completed (and if found feasible), the joint assessment of the technical aspects of the project and a joint database should be established. This will help to create a consensus on the data gathered in the region, and instill trust in so far as all the polities share in equal access to the same information.

A later phase would involve the construction of the conduit, as well as establishment of the cooperative management structure (this will be elaborated upon in section 4 of this thesis). The management structure should, like the NWSAS, have the

goal of sustainability long after the initiation of the project has ended (and possible implications for the rest of the Jordan River Basin; this will be expanded upon in section 4.3). A final, yet necessary component in the project's realization is the required contingency planning within the region for the possible negative ramifications of the conduit or things that may go wrong along the way.

I think the particulars of the phasing of the project are the most important and apt aspects of the NWSAS case that can be transferred to the proposed RDC. The other aspects of the project have been enumerated, as echoed in the other cases presented, the joint data collection and information base is something that seems essential to ensuring trust in the initiation of a joint management project. It is for these reasons that the NWSAS provides a useful comparison from which to borrow in the conception of the management structure of the proposed RDC.

3.1.4 Rio Grande Basin Case

3.1.4.1 Rio Grande Basin Context

The Rio Grande/Río Bravo is the fifth largest river in North America, running 600 miles north-south from the Rocky Mountains to El Paso Texas, at which point it turns southeast and stands as 1200 miles of the border between the United States and Mexico. The Rio Grande Basin (RGB) is a semi arid and arid climate with a rapidly increasing population (expected to reach around 8 million people by 2030) that depends on the water from the basin for its livelihood.[115]

The Rio Grande has been a source of contention between the United States and Mexico for well over a century. In the mid-19th century (e.g. Mexican War, late 1840's) the United States and Mexico fought vicious battles that contended the international boundary between the two nations. The Treaty of Guadalupe Hidalgo was signed in 1848, which brought peace (for the time) between the two nations, and American settlers began to move west. The expansion westward necessitated the use of the Rio Grande for irrigation in the upstream portion of the river and already by the 1890's "a series of official

[115] Jurgen Schmandt, "Bi-national Water Issues in the Rio Grande/Rîo Bravo basin," *Water Policy* 4 (2002): 2.

reports confirmed…the river was going dry by the time it reached El Paso (Texas)."[116]

During this time, joint commissions were established between the United States and Mexico to survey and map the border lands. As the land became more populated, the issue of territory surrounding and demarcated by the river became a necessary topic of discussion. The United States and Mexico signed the Convention of November 12, 1884, which helped to settle the territory disputes. In order to carry out this convention, the U.S. and Mexico established an interim Intentional Boundary Commission (IBC) with a convention signed on March 1, 1889. The IBC was composed of a separate U.S. Section and Mexican Section. At the turn of the 20th century the U.S. and Mexico agreed to make the IBC a permanent binational entity under the Convention of November 21, 1900. This was the precursor to the modern International Boundary Water Commission (IBWC) (the name was changed in 1944).[117]

In 1906, the United States and Mexico signed a convention that divided the Upper Rio Grande waters. The convention provided Mexico with an allotment of 60,000 acre-ft (about 73 MCM) of water from the Rio Grande, annually. It also expanded the jurisdiction of the IBC to be responsible for "settling disputes over the exact location of the international border [and] to [be responsible for] the management of [the] Rio Grande waters from El Paso to the Gulf of Mexico."[118]

In 1938 the IBC built the American Dam in order to separate water that was allocated to the U.S. and Mexico. The American Dam (and Canal) is operated by the U.S. Section of the IBC/IBWC. In 1930, the IBC, at the request of the U.S. and Mexico, restored the levees and interior floodways of the Lower Rio Grande Valley. In 1950-80's, the IBWC constructed the Falcon and Amistad International Storage Dams and Power Plants after conducting a joint feasibility study on the project. The IBWC has also worked with both countries to improve the sanitation and environmental issues with regard to the Rio Grande. They have constructed several wastewater treatment plants on both sides of the border. The IBWC is an avenue for cooperation between the United States and Mexico, with regard to the Rio Grande as a shared resource and international boundary.

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[116]Robert Autobee, "Rio Grande Project," Bureau of Reclamation History Program; Denver, Colorado; Research on Historic Reclamation Projects (1994), http://www.usbr.gov/projects/Project.jsp?proj_Name=Rio%20Grande%20Project&pageType=ProjectHistoryPage

[117] "Strategic Plan FY 2008- FY 2013," International Boundary and Water Commission, United States and Mexico, United States Section, Initial Approval: April 2008, Revised: April 2010, 7-8.

[118] Schmandt, 5.

> The IBWC is charged with applying the rights and obligations that the Governments of the U.S. and Mexico assume under various boundary and water treaties and agreements, and to settle disputes that arise in the application of these agreements. The IBWC is committed to exercising this authority in an environmentally sound manner that benefits the social and economic welfare of both countries, and improves U.S.-Mexico relations. The IBWC is entrusted with the responsibility of diplomatically addressing boundary preservation, accounting of then national ownership of transboundary surface waters, border sanitation and water quality problems, and affording flood control protection to millions of people on both sides of the 1,952-mile U.S.-Mexico border. This is accomplished through the joint construction, operation, and maintenance of four flood control systems (Tijuana River, Upper Rio Grande, Presidio Valley, and Lower Rio Grande) with approximately 500 miles of levees in the U.S. alone, five diversion dams (Morelos, International, American, Anzalduas, and Retamal), two international storage dams and hydroelectric power plants (Amistad and Falcon), three international wastewater treatment plants (South Bay, Nogales, and Nuevo Laredo), and over 700 monuments and markers to demarcate the land boundary.[119]

The IBWC is a long-standing institutional commitment between the United States and Mexico to work cooperatively at safeguarding their shared resource—the Rio Grande. The commission is composed of a separate Mexican Section and United States Section. The head of each is the Engineer Commissioner, who is appointed by the respective President of each country. Each Section is independent of the other and answers to the Department of State (for the U.S. Section) and the Secretariat of Foreign Relations (for the Mexican Section). The headquarters are located in the neighboring cities of El Paso, Texas (U.S.) and Cuidad Juárez, Chihuahua (Mexico), with additional field offices along the border, for easier operation of joint work. Each Section maintains their own legal counsel, engineering staff, and administrative staff.

The Commission meets "on a regular basis, alternating the place of meetings, and the staffs of the two Sections are in frequent contact."[120] The decisions that are reached are recorded as "Minutes" and must receive approval by both the U.S. and Mexico before entering into force and becoming binding international agreements. This "Minute" process has not led to the broadening of IBWC of authority, however.[121]

Recently, a non-governmental organization has come into being to help repair the

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[119] "Strategic Plan," 14.
[120] Ibid, 6.
[121] Schmandt, 5.

discontinuities present in the IBWC system. One reason the IBWC has many gaps in its system is because the groundwater laws in the United States and Mexico differ so greatly. In the United States, the use or abstraction of groundwater may need the approval of a state officially (i.e. New Mexico), or may not need approval from anyone because the water rights are privately owned by the land proprietor (e.g. Texas). In Mexico, water is public property (ground as well as surface) and is regulated by the national government (Mexican Water Commission).[122]

This fact makes the coordination of efforts within the basin particularly difficult with the management structure of the IBWC. The laws are so different and there is no cooperative organization that established the use and priority guidelines of the water sources in a mutually beneficial manner. The IBWC has not completed a quantitative assessment of the underground water availability for the basin region, as of yet. Neither has the IBWC, or federal or state agencies, authorized a conjunctive water planning and management program.[123]

The Paso del Norte Water Task Force (hereafter PNWTF), is a non-governmental organization with the expressed purpose of "conducting joint studies, organizing outreach activities, and preparing policy recommendations"[124] within the Paso del Norte region (includes parts of New Mexico, Mexico, and Texas).

> The Paso del Norte Water Task Force unites water managers, water users, experts and citizens working cooperatively to promote a tri-state, binational perspective on water issues that impact the future prosperity and long-term sustainability of the region.

In 1998, a team (José Garcia, Oscar Ibañez, and Jurgen Schmand) from New Mexico State University, Universidad Autónoma de Cd. Juárez, and the Houston Advanced Research Center, with support from the William and Flora Hewlitt Foundation created the PNWTF in hopes to fill the gaps that existed in the current management of the river basin and the surrounding region.[125] The PNWTF is led by community leaders, with equal representation from Chihuahua, New Mexico, and Texas. There are three co-chairs that serve six-month terms. The stakeholders include the city water utilities, irrigation

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[122] Ibid 6.
[123] Ibid, 6.
[124] "Organization," Paso del Norte Water Task Force, http://www.sharedwater.org/English/MissionStatement/Organization/tabid/682/Default.aspx
[125] Ibid.

districts, water users and experts of the region. Local staff helps to continuously support the regional research organizations. The recommendations, of the PNWTF, are aimed at bringing community priorities together, and they are submitted to community input before being decided upon.

The Support Team of the PNWTF initiates Water Forum events, prepares Task Force meetings, provides technical support to the Task Force, and coordinates the interactions with water agencies and the regional community. The Water Forums are open events, with workshops and conferences, which are informal in character. The forum's purpose is to discuss water issues and draft the Task Force recommendations; the forum is convened when necessary, with no set date. The Task Force, itself, meets four times a year, to make decisions on future actions and projects, and to make recommendations.[126]

The Rio Grande Basin is an example of cooperation without a joint management structure. The IBWC allows the two countries to cooperate on ventures, but not to be bound together in their management structure. They may act independently from one another. This can be a positive tool so far as the governments are not willing to form a cooperative management structure, but it can also hinder the greater management of the river basin. The Rio Grande Basin and the IBWC present a good learning tool for applications that may or may not work in the management structure of the proposed RDC project.

3.1.4.2 Comparative Analysis

The parallels that exist between the Rio Grande Basin case and the proposed RDC project are numerous and striking. Both are situated in water scarce areas accompanied by long and pronounced conflict. The U.S. and Mexico were at conflict with one another for more than a century along the border. While treaties have been passed between the two nations, there is hardly a warm peace. Both sides harbor bitter sentiments towards the other on the basis of resource extraction/pollution, territorial claims, as well as cultural and political discontinuities. Likewise, the Jordan River Basin has been experiencing conflict for decades. The peace that exists between Jordan and Israel is somewhat similar to that between the United States and Mexico, while peace between the Palestinian Authority and Israel is much more tenuous, if existent. The Rio Grande Basin has been a source for

[126] Ibid.

cooperation between the two countries, and, as the Bureau of Reclamation states, "it is fair to say the border between the United States and Mexico would have been much more tense if someone had not stepped in…"[127]

There is also a clear asymmetry between the United States and Mexico. The political and economic prowess of the United States far out-shadows that of Mexico in the global realm as well as within their particular relationship. The U.S. has the upper hand in their relationship involving resources and the Rio Grande; the U.S. is much more capable of producing unilateral projects on their side of the border. Similarly, there is an asymmetrical hierarchy in the Jordan River Basin—Israel has the upper hand in the basin, and Jordan is more capable than the Palestinian Authority.

The difference between the United States and Mexico, in terms of development and law, makes it difficult to operate basin-wide management techniques.[128] The asymmetry in the Rio Grande Basin case was somewhat resolved with the Treaty of February 3, 1944 for the Utilization of Waters of the Colorado and Tijuana Rivers and the Rio Grande, which distributed water from the rivers to Mexico. It overturned the U.S.'s earlier position of the Harmon Doctrine, which said that the U.S. has rights, as the uppermost riparian, to use the water in its territory as it pleased.[129] This helped to shape the negotiations and acceptance of a shared right to the Rio Grande water. Considering the clear oppositions that existed between the United States and Mexico in their asymmetrical relationship, the IBWC functions through their respective government channels so as not to compromise the "principle of national sovereignty."[130]

This type of governance structure has worked in the Rio Grande Basin, but I do not believe it to be a positive example for the proposed RDC project. The difference being that the Rio Grande Basin is an issue of riparian rights of an existent body of water, while the RDC will be a constructed project at the request of the three nations. Thus, it seems clear that the best-case scenario would be for the countries to govern the joint project in a joint manner. While it may be tempting to introduce a measure like this (i.e. the IBWC), particularly with respect to the Palestinian Authority (because of their conflict over sovereignty from Israel), I believe it could serve to further perpetuate the asymmetry that

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[127] Autobee.
[128] Schmandt, 1.
[129] N. Kliot, D. Shmueli, U. Shamir, "Institutions for Management of Transboundary Water Resources: their nature, characteristics and shortcomings," *Water Policy* 3: 20.
[130] Ibid, 20.

exists rather than to dispel it. I concede this might be an attractive option for the joint management of the Jordan River Basin, as a whole; however, I maintain that for a project that will be jointly constructed, it should be cooperatively managed under the umbrella of one organization.

The IBWC has also been criticized for numerous reasons, such as not addressing new issues as they arose, and having limited flexibility with stakeholders from both countries. These issues are partially a function of the structure of the organization—the fact that the countries report separately to their own governments and do not have a joint commission that heads the entire management of the basin. Without this type of structure, the flexibility in working with stakeholders from both countries in a cooperative way becomes much more difficult.[131] New issues that arise may not be handled very efficiently or effectively if each Section must go through their own governments' legislative reviews before deciding and administering a course of action. Just as easily, this process may fall to the wayside due to the difficulty in navigating the bureaucratic system like the IBWC national Sections. This cautionary example of inflexibility and bureaucracy must be heeded in the conception of the RDC and its management structure.

The PNWTF helps to fill the gab the IBWC leaves in terms of institutional management of the river basin. The PNWTF existence also demonstrates the ineffectiveness of the IBWC in terms of the joint, cooperative management of the resource. I think that IBWC's management of the Rio Grande Basin provides a good example of a tempting institutional structure that will not work well in the proposed RDC project. One can learn from the initiation of the PNWTF, that the IBWC does not fulfill all that is necessary in the basin's management, and even more so if this were to be a situation like the RDC. The IBWC is not an inherently bad structure, and there is some logic in its organization, but it is presented here as a case to watch out for in terms of the proposed RDC project.

3.1.5 Section Conclusion

The four cases presented in this section provide good and distinct examples to learn from in the creation of a management structure for the proposed RDC project. The equal representation seen in the Great Lakes Basin, the NBI, and the NWSAS, and for the most

[131] Schmandt, 5.

part in IBWC demonstrate the extreme necessity in having all parties, which are involved in a transboundary project, equally involved in the institutional composition. The proposed RDC project will necessitate this as well as the more symmetrical relationship that a joint, equally representational organization will bring to the beneficiaries.

A prior agreement that dictates the mission, jurisdiction, and goals of the project and the three polities is imperative as well. This was demonstrated in the Great Lakes Basin, the NWSAS, and attempted in the NBI (CFA). This is missing in the Rio Grande Basin case, and I think it is an essential element of transboundary cooperation. The distance between the management institution and the government/political structure is also a necessary element in a conflict prone situation. The Great Lakes Basin, the NBI, and the NWSAS all exemplify this distance. In this manner, the recommendations and initiatives of the organization are not linked to political intentions or disagreements, but are removed and the parties become more receptive.

A shared data/information base is another essentiality in transboundary cooperation. The Great Lakes Basin and the NWSAS provide the best examples of this. The countries must all have the same data and the same access to the data. A joint technical committee or research gathering institution is a positive way to establish the data in consensus. Joint boards or committees also provide a positive way to instill trust between the parties, as they jointly participate in developments and mini-projects.

The incorporation of external support helps to provide incentives to the internal cooperation of transboundary nations. This was seen in the NBI and the NWSAS case. The external support of organizations and donors helped to create an incentive for the countries involved to work together now and in the future. The internal incentives, as discussed in the NBI, are also a necessary part to be understood in the creation of a management structure. One must understand what the parties seek in the cooperation in order to be able to effectively deliver it through the institution and its management.

Confidence building techniques are essential in the sustainability of transboundary cooperation. The NBI and the Paso del Norte Task Force provide good examples of meetings, activities, and events between the parties involved to instill positive communication and trust. These activities should not be understated, as they help to foster better relationships between the countries involved, which will in turn help to quell possible future conflicts, with regard to the projects and possibly in general.

The phasing of the NWSAS provides a good example of how to go about the

construction of a sustainable, cooperative transboundary institution. The countries understand the goal, but go about it in a methodical manner that takes time. Even if it takes a long time, it helps to ensure the effectiveness of the project parts, so that the whole of the institution may be as effective as possible. The data gathering and trust building actions must come before, during, and after an agreement is proposed and reached between the countries involved. While the other examples in this section did not employ an explicit phasing method in the building of their institutions, it is clear that this is a helpful facet. The NBI is at a standstill in terms of the CFA and the creation of a permanent structure. This may have happened regardless, but had a proper protocol been decided before the countries ventured into the project it may have helped to smooth the road to building a permanent structure. The phasing example from the NWSAS should not be overlooked in terms of its transferability to the proposed RDC project.

A few points to watch out for from these examples are the "good faith" understanding in the Great Lakes Basin, as well as the ambiguity written into the NBI agreement. In the Great Lakes Basin, the "good faith" facet of the non-binding recommendations of the IJC may function well, but I believe this would not be positive in the proposed RDC project. As "good faith" relations have not shown to be a positive or effective measure in the past between the three polities (Israel, Jordan, and the Palestinian Authority), I do not think it would work well in this organization. The clarity of the agreements and organization should be explicit, as the recommendations should be binding and demand equity in their pursuits. If actions are not binding and one country neglects to follow through, at all or in a timely manner, this could lead to conflict in terms of the project and more broadly in the region. This should be taken into consideration in the organization of the management structure of the proposed RDC project.

The ambiguity exemplified in the NBI case is also something to watch out for. It is a criticism of the Jordan Israel Peace Treaty from 1994 and it has produced measurable difficulties in the effectuation of some of the facets dictated in the water annex. The ambiguity in the NBI case has sufficiently stalled the progress of reaching an agreement and moving forward. The language of an agreement in the RDC case, as well as the organization of the management structure, should be clear and leave no room for different interpretations. The different interpretations of parties to an agreement in the RDC case could have negative outcomes, such as conflict between the nations involved. This should be watched for in any agreement made between the parties, as well as in the organization

structure.

The case studies presented provide positive and negative examples of what to consider in creating an institution that will cooperatively manage the proposed RDC project. It is clear that what works in some contexts may not be apt to transfer; likewise, new ideas must be incorporated based on the knowledge of past mistakes. It is for this reason that the structure of the organization of the RDC cannot be created purely from analysis of case studies, but must incorporate the intricacies present in the region. Thus, local opinions, views, and goals must be incorporated in the conception of a sustainable and cooperative management structure for the proposed RDC project.

3.2 Interview Results

The goals of my interviews were to provide me with insight into the views of the people who will be involved and/or affected by the project in terms of its realization, goals, possible benefits and detriments. I was particularly interested in the respective views held within the three nations and how these may converge or diverge with each other. It is for this reason that I first present the general responses from each country, and later discuss the commonalities and dissonances. I have chosen to present certain questions and answers from the interviews in the form of tables for clearer understanding, while others are more appropriate for a qualitative discussion.

3.2.1 Jordanian Interview Results

In Jordan, I interviewed government officials, NGO members, and university professors in the fields of geology and engineering. I do not think that my interviews covered the gamut of thought regarding the project within Jordan, but they shed light on how those who have expertise in the area see the project, particularly with regard to the goals, constraints, and management structure.

3.2.1.1 Goals of the Project

The Jordanian governmental officials claimed that the main goal of the project was to

save the Dead Sea.[132] The governmental officials regarded the Dead Sea as the responsibility of the world, not just the three nations in the region. Others echoed this response, however, the governmental officials' was somewhat different than the general global responsibility. Their logic was: the world helped to create Israel, and therefore the refugees (Palestinian) in the region; Israel is the main reason for the decline of the Dead Sea level, therefore the world is responsible to help fix what they helped to create. They also view the instability in the region as a result of the world's decision to create the State of Israel. This project will help bring cooperation, stability, and peace to the region, which makes it a valid reason to be the world's responsibility. They also acknowledged that the world sees the Dead Sea as a World Heritage Site and, therefore, it is their responsibility to help in its preservation. The governmental officials mentioned Jordan's water scarcity and the water gained from the project as second to the Dead Sea, in terms of the project's goals.

Likewise, the hydro-geology professor (Dr. Elias Salameh), whom I interviewed, emphasized the priority of saving the Dead Sea, but he also acknowledged the goal of peace and a trilateral benefit to all the nations. Dr. Samer Talozi, an engineer, placed water as the central goal of the project—water for Jordan specifically, as a renewable and independent resource (meaning not allocated from Israeli water). He also mentioned the importance of saving the Dead Sea, but concluded that the "underlying cause [of the project] is securing water."[133] Abdel Rahman Sultan, the Deputy Director of Friends of the Earth Middle East in Jordan, echoed the goals expressed in the Terms of Reference (saving the Dead Sea, peace project, new water source), but had a different stance in terms of what he felt as the motivations/incentives for the nations involved.

Another question I asked in each interview was designed to gain insight about the goals for each country involved, as perceived by the interviewee. Some answered this question in the same way as the preceding question concerning the goals of the project, while others delineated and answered the question in more detail, along the lines of what I was seeking. For example, Sultan expressed the motivational aspect for each country differently from the goals laid out in the Term of Reference. He emphasized Jordan's need

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[132] Mousa Dafi Al-Jama'ani and Khaled Gsous, interview by author, Jordan Valley Authority, January 5, 2010.

[133] Samer Talozi, interview by author, Jordan Institute of Science and Technology, January 6, 2010.

for new water, Israel's intentions of peace and collaboration in the region, and the Palestinian's goal of sovereignty—defining their territory and rights to water (this will be explained in section 3.2.3.1 of this work).

3.2.1.2 Constraints

I was also interested in the perception of the interviewees regarding potential causes for obstruction to the project: what may cause it to fail, or not come to fruition. Political will and public opinion were the most oft cited reasons (5 out of 5 stated this), amongst the Jordanian participants, for potential obstruction to approval and construction of the project. One participant discussed the difficulty of swaying public opinion in terms of cooperation with Israel. The participant emphasized that, in terms of "naysayers," there was "no scientific argument," but rather Jordanians who are against cooperation with Israelis.[134] Financial feasibility was cited amongst more than half (3 out of 5) as a possible cause for obstruction. Inefficient bureaucratic procedures, as well as the feasibility of the energy necessary to operate all parts, from construction to pumping the potable water, were both mentioned as possible constraints to the project.

3.2.1.3 Management Structure

I asked two questions that fall under this heading. One asked if the participants thought the project would create peace or necessitated a prior peace; another asked how the project should be managed, what the management structure should look like. The Jordanian response was overwhelmingly for a joint cooperation between the three countries, with equal representation from each. Many mentioned a consortium from the three countries. The need for a separate administration, distanced from the government was mentioned, as well as the necessity for scientific cooperation and advisement. The majority of the participants expressed the understanding that peace must, or would be best, if it came before; the other participants, while not declining to answer, evaded the question.

3.2.1.4 Conclusions Concerning Jordanian Interviews

The Jordanian responses do not amount to a general consensus about the Jordanian

[134] Elias Salameh, interview by author, Jordan University, January 5, 2010.

population, as a whole; however, they do shed light on the opinions that exist amongst those involved in the field related to the project. The Jordanians are fairly set on going ahead with this project; this can be seen from their responses, as well as newspaper articles.[135] Their top priority is that of securing new water resources for their water starved population. Their joint venture with Israel and the Palestinian Authority provides an opportunity for regional cooperation, as well as an incentive for outside capital to fund the project. This cooperative project will be based on the needs and perceptions of each country. It is for this reason that the Jordanian points of view, as well as Israeli and Palestinian, should be understood and considered when creating the management structure of the proposed RDC project.

3.2.2 Israeli Interview Results

The Israeli interview process was largely the same as the Jordanian. I asked questions to try and elicit the type of answers I was seeking, while not limiting the participants' responses. The responses I received from the Israel participants varied markedly from one another, depending on their occupational sector and/or personal convictions. My goal was the same as in the Jordanian interviews, to understand the points of view on the Israeli side toward the project and to try and take them into consideration later in the creation of the management structure.

3.2.2.1 Goals of the Project

The goals of the project, as expressed by the participants, were largely those explicated in the Terms of Reference for the project. The majority answered that they were to save the Dead Sea, bring new water (either for Jordan, Israel, the Palestinian Authority, or some combination of these), and to cooperate regionally. Few interviewees mentioned

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[135]Merav Ankori, "Jordan Set to Begin Alone on Red-Dead Canal," *Globes [online]*, September 29, 2009, http://www.globes.co.il/serveen/globes/docview.asp?did=1000501533
Amiel Blajchman, "Jordan to Build Canal Connecting the Dead Sea with the Red Sea," Ecolocalizer, May 20, 2009, http://ecolocalizer.com/2009/05/20/jordan-to-build- canal-connecting-the-dead-sea-with-the-red-sea/
Mohammad Ghazal, "Dead Sea Development Zone Launched," *The Jordan Times*, May 18, 2009. http://www.jordantimes.com/?news=16791
Karin Kloosterman, "Jordan to Launch Red-Dead Canal Without Israel," *Green Prophet*, May 19, 2009, http://www.greenprophet.com/2009/05/19/9077/jordan-red-sea-dead-sea-canal/

other goals, including economic profit (2 people), tourism, and employment. Another answer I received stated that Israel does not want to be the obstacle to the Jordanian pursuit of the RDC.

There has been much media discussion about the Jordanian's going forward with the project, with or without cooperation, because they are so water desperate. The above participant explained that Israel did not want to be the obstacle in the Jordanian plan for the RDC and this is one of the reasons for Israeli involvement.

When prodded to explain what the goals in each nation are, the answers were quite different. The majority said that Jordan's motivation was to receive new water. A small number said that Israel had an interest in preserving the Dead Sea, and that this would help Israeli economic development. In the same vein, tourism was also named as an incentive for Israel. A minority of interviewees also mentioned Israeli incentive to cooperate with Jordan. It is interesting to note that these people did not discuss Israeli interests in cooperating regionally, but rather with Jordan, specifically. They did not mention a negative statement about Palestinian inclusion, rather they answered positively that Israel is motivated by cooperation with Jordan, neglecting to mention the Palestinian Authority (with the exception of one participant).

Israeli incentives for receiving water were mentioned, although downplayed as a small part of their rationale. Likewise, Palestinian motivations for fresh water were mentioned, but equally downplayed as playing a minimal role in their reason for involvement. The Palestinian motivation was again mentioned as the acknowledgement of legitimate claims to water and territory, and the influence this may have on Palestinian sovereignty. One Israeli participant echoed the sentiments of a Jordanian participant who explaining that the Palestinians were now recognized as riparians to the Jordan River Basin and Dead Sea. The other participant to mention the issue of Palestinian inclusion was a bit different. The interviewee mentioned the issue of Palestinian inclusion in response to another question about negative outcomes of the project.

The participant explained that for Israel, the precedent set by recognizing the Palestinians in the project, and as a riparian gives them legitimacy in the basin and access to water and land. This would help to improve the status of the Palestinians in the basin. The participant did not explicitly claim that this was the motivating factor for Palestinian involvement in the project, but rather discussed it from the opposite side as a fear of Israeli

decision-makers for Palestinian involvement.[136]

3.2.2.2 Constraints

The constraints from the Israeli perspective were largely the same as the Jordanian views. The majority of the interviewees saw the economic feasibility of the project as the biggest obstacle to approval, construction, and operation of the project. The unknowns of the project were also seen as a constraint by a minority of the participants. The possibility of negative environmental impacts, and seismic activity in the future along the conduit's route were also mentioned. Politics were cited as a possibility in stalling or obstructing the fruition of the project, either with regard to the project or unrelated conflict in the region. One participant also voiced a constraint being that the Jordanians have an interest in their own project, without Israel (or Palestinian) involvement, as mentioned in section 3.2.2.1. Another argument (see also 3.2.2.1) was that Palestinian participation forms a constraint to approval from the Israeli side.

3.2.2.3 Management Structure

The same two questions concerning management were posed to the Israeli participants, as well. The Israelis did not explicate fully on the idea of whether the conduit would bring peace or require this condition prior to the project. Nobody mentioned that peace must be established before the beginning of the project. One person said the project *may* bring peace and another said that the project definitively would *not* bring peace.

As for the management structure ideas, the majority emphasized a cooperative and equally representative organization, with no regard to the amount of water allocated to each country.[137] The idea of the world having a responsibility to be involved and help in saving the Dead Sea was reiterated on the Israeli side. The inclusion of *the people* was also mentioned as a necessity, if the project has a real agenda of creating an atmosphere of peace. A minority of interviewees stated that the project should be the responsibility and under the leadership of the Jordanian side, with limited involvement of Israel and the Palestinian Authority. Emphasis was also placed on the necessity of a cooperative agreement beforehand. This was not explicitly explained as a peace agreement, but rather

[136] Itay Fischhendler, interview by author, Hebrew University, November 4, 2009.
[137] Mira Edelstein, interview by author, Friends of the Earth Middle East (Tel Aviv), May 5, 2010.

an agreement about the project between all of the nations involved.[138]

3.2.2.4 Conclusions Concerning Israeli Interviews

The Israel side displays a consensus of opinion on certain matters—i.e. the goals of the project, the incentives of the Jordanian side, the cooperative management structure. These opinions do not represent the entire population, rather a good spectrum of the existing points of view. A majority of interviewees expressed the view that the greatest incentive for Israeli participation is regional cooperation and preservation of the Dead Sea. Whether this cooperation is intended to include the Palestinians as a genuine partner remains to be seen. Regardless of this aspect, it shows a proclivity on the Israeli side toward cooperative management of the proposed project. This, coupled with similar motivations from the other sides, will aid in the realization of a joint management structure between the three nations.

3.2.3 Palestinian Interview Results

I interviewed people from various environmental and water related NGO's, as well as from the Palestinian Water Authority. Many of the opinions reinforced what others from Jordan and Israel had said, although a few were more explicit in one aspect or another.

3.2.3.1 Goals of the Project

The goals explicated by the interviewees were as follows: saving the Dead Sea, providing more fresh water for drinking, economic development, tourism, energy production, cooperation with Israel and Jordan, and Palestinian sovereignty. Many of the answers concerning the general goals of the project, overlapped with responses about the perceived individual incentives of each country and their goals.

The majority of people responded that Jordan's priority and motivation was to secure more drinking water. A minority of people extended this to be a partial incentive for Israel and the Palestinian Authority as well. The Dead Sea was also mentioned as an incentive for all parties. One person mentioned Israel's interest in peace being a motivational aspect,

[138] Fischhendler, interview by author.

while another mentioned that Israel wanted to *show* that they want to cooperate and establish peace.[139] Two participants claimed the Palestinian motivation for sovereignty and attainment of claims to water and rights.

The Palestinians were not included in the initial plan of the RDC, but they petitioned very hard to the World Bank to be included. Both Jordan and Israel were hesitant and obstructionist in allowing their inclusion. The Palestinians asserted their participation in the project and the World Bank conceded that indeed the Palestinian Authority must be included in the project because they are a riparian of the Jordan River Basin and the Dead Sea. This helped to set a precedent by giving the Palestinian Authority, not only international, but also Israeli and Jordanian recognition of them as a riparian with rights to territory on the Dead Sea and water from the project. Eventually, the Palestinian Authority, like Jordan and Israel, was included as a "beneficiary" of the project.[140] A beneficiary does not technically mean that they are considered equal in economic terms, but they are eligible for equal rights in terms of benefits from this project.[141] The hope of Palestinians is that this will set a precedent for future negotiations with Israel in asserting Palestinian sovereignty over territory in the West Bank.[142]

3.2.3.2 Constraints

Palestinians saw many of the same constraints to the project's approval and fruition as the Jordanians and Israelis. Among these is the necessity to convince the public of the project's benefits for the Palestinian people. Economic feasibility was discussed, as well as the risk of seismic activity along the planned conduit route. The high cost of the fresh water that will come to the polities, from the RDC, was also emphasized as a possible cause for concern in approving the project and its economic feasibility. A majority of the participants considered politics to be a possible factor for obstructing the project's fruition. The necessity in making the intentions of each nation clear and a prior agreement over

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[139] Basema Bashir, interview by author, Palestinian Water Authority, March 31, 2010.
[140] Abdul Rahman Sultan, telephone interview with author, April 19, 2010.
Yusef Awayes, interview by author, Palestinian Water Authority, May 2, 2010.
Edelstein.
Bashir.
Fischhendler, interview by author.
[141] Fischhendler, interview by author.
[142] Awayes.

guiding principles and ideas was emphasized extensively.[143]

3.2.3.3 Management Structure

Amongst the Palestinian interviewees there was a much stronger position, as compared to that of Israel or Jordan, that a peace agreement must be made before the project can go ahead. One person expressed the possibility that the project may breed peace in the region.

In terms of the management structure, the necessity for an independent entity (outside of the government) with equal representation from each nation was mentioned by a number of participants. The involvement of the international community, organizations, and institutions—like the World Bank—were also seen as a positive influence on a cooperative management structure. One person also raised the possibility of private sector management as a means to keep the managing entity separate from governmental agendas. A few people also highlighted the need for an agreement before the project takes place. An independent technical committee was also mentioned as a positive asset for the management structure. This committee will not be influenced by any one party and will research aspects that are of interest to the project.

Building relations between people, from each country, was also mentioned as a necessity in order to instill trust and efficient operation of the project. A participant also emphasized the positive aspect of creating a "win-win" situation through cooperation and a "lose-lose" situation for non-cooperation. The countries would have a stronger incentive to work together because of positive benefits, but a disincentive if they do not cooperate.

3.2.3.4 Conclusion Concerning Palestinian Interviews

The Palestinians had some cohesive opinions on the questions asked. Many people shared in similar thoughts; the views were not as varied as among the Israeli interviewees. The political aspects of the project, and the region, overshadowed most aspects of the project in terms of the Palestinians' concerns. Understandably so, the Palestinians are in the most precarious situation in terms of the legitimacy of their claims in the area, being in a current state of occupation. The Palestinian sentiments that exist do not seem to preclude

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[143] Amjad Aliwei, interview by author, House of Water and Environment, March 31, 2010. Bashir.

their willingness to cooperate on the project. It seems that the Palestinians, though cautious and filled with mistrust, are willing to cooperatively participate in the venture, should all the other aspects prove feasible.

3.2.4 Convergences and Divergences

The aim of the interview portion of this research is to understand how each of the nations view the proposed RDC project and how these goals may converge or diverge from one another. Each nation has its own vested interests regarding their involvement in the project. But it is how these interests are perceived by one another and are put into action that will affect the cooperation necessary to create a joint management structure.

3.2.4.1 Goals of the Project

The following table demonstrates where the intersecting points lie in terms of the expressed goals of each nation involved.

Goals of the project	Jordan	Israel	Palestinian Authority
Water	III	IIII	IIIII
Peace/cooperation	II	IIII	I
Dead Sea	IIIII	IIII	IIII
Employment	II	I	
Economic profit		II	I
Tourism		I	I
Palestinian sovereignty			I
Energy			I

Table 1 Interview answers, divided by country, concerning the question: "What do you see as the main goals of the project?"

Table 1 demonstrates that all the countries agree upon certain goals of the project. Certainly, the majority of the interviewees from the three countries expressed opinions that are identical with the three goals explicated in the Terms of Reference: the first three rows in Table 1. The following rows show what the people within each respective country feel as more implicit goals of the project. These items are not designated as goals by the World Bank, but are proposed by the interviewees of each country as goals that may be achieved through the construction of the project.

These answers assist in the construction of guidelines and principles of the project,

so that the participating parties can be in consensus, while none will feel as if their goals have not been met. Certain prospective goals, like energy production for example, will most likely not be met by the RDC. As it has been extrapolated thus far, the project will not even be energy neutral and will need augmented power (in addition to the hydropower generated) to pump the water to the desalination point, and from there to the respective nations.[144] This answer by an interviewee concerning energy exemplifies the poor public knowledge of the details of the project, resulting from insufficient public dissemination by the World Bank and the companies involved in the feasibility studies.

Other expressed goals, like economic profit, are not aims that people consider explicit, but they perceive them as goals of decision-makers. Likewise, tourism and employment may be beneficial to the people within the countries, but were also considered as goals of the decision-makers.

The goals of the project intersect where vital—water, peace/cooperation, and the preservation of the Dead Sea—and overlap on a few other meaningful points. The divergent points (those that only one country expressed, i.e. the Palestinian Authority) are not detrimental to the foundation of the project. The Palestinian emphasis of their sovereignty is a goal that they desire. The establishment of the World Bank mandate and Terms of Reference of the project, in which they have been accepted as a riparian, largely satisfy these desires for sovereignty.

This data shows the signs of a possible beginning to an agreement, prior to construction, which would highlight the goals and principles guiding the project. The convergent points are those that should be emphasized in such an agreement. The fact that the countries intersect and overlap on the goals of the project is a positive sign, hopefully, in the cooperation of a joint venture and management structure.

[144] Rachel Bergstein, "Regional Environmental Hazards and the Red-Dead Peace Conduit," *Green Prophet*, June 27, 2008, http://www.greenprophet.com/2008/06/27/693/red-dead-peace-conduit/ Beyth, "The Red Sea and the Mediterranean-Dead Sea canal project," 5.

3.2.4.2 Constraints

Constraints	Jordan	Israel	Palestinian Authority
Economics	III	IIII	II
Political/public will	IIIII		II
Seismic activity			I
Politics		I	III
High water costs			I
Unknowns		II	
Environmental impact	I		
Jordanian self-interest	I	I	
Palestinian sovereignty		I	
Bureaucratic procedure	I		
Energy feasibility	I		

Table 2 Interview answers, divided by country, concerning the questions: "What appears to be the biggest obstacle?" "What are the constraints in receiving approval (locally, national, internationally)?"

The opinions that exist in the three countries with respect to the constraints that may impede the proposed RDC project are demonstrated in Table 2. While some of these constraints must be addressed in the feasibility studies (environmental impact, energy feasibility, seismic activity along the conduit route, economic feasibility), others must be taken into consideration in terms of the management structure. The comment about bureaucratic procedure was expressed with regard to the World Bank and its convoluted and inefficient processes. This aspect must be sorted out if the project is deemed feasible.

Jordanian self-interests, as well as political/public will are two areas that can be addressed prior to the start of the project itself. The use of relationship-building activities will help to foster trust between the nations. Public fora can help to build understanding of the project and trust amongst the decision-makers. Both of these constraints stem from mistrust and misunderstanding. The employment of *confidence building* measures would help Jordanian people get to know and eventually trust Israelis, ultimately leading to a cooperative situation. This would help in the reverse, for Israelis to get to know Jordanians and feel confident in their relationship (the Palestinians are excluded in this statement only

because they did not express this sentiment, but they should be included in confidence building activities). A formal agreement between the two countries specifically, but obviously involving the Palestinian Authority as well would help both sides to feel as if the other is engaged in the project and in mutual cooperation. Public meetings and discussions would help the people to become better informed and to understand the project's intentions, as well as have a say in what will happen. These two measures can help to quell these two stalling points.

Palestinian sovereignty, as mentioned, is a possible constraint to Israeli approval of the project. The Israeli government is afraid of the precedent set by their acknowledgement of the Palestinian Authority as a riparian. However, this has already materialized in the Terms of Reference, which were drawn in 2005, addressing the Palestinian Authority as such. The demand of Palestinian sovereignty and territorial discussions about the borders between Israel and the West Bank, and those that lie within the West Bank, are another matter. This may be grouped into the idea of politics as a constraint.

The political atmosphere of the region is an apt fear in terms of constraints to the project. Currently, the project is being studied and all the nations involved plan to go ahead. The possibility of a conflict erupting or tensions rising is very real and may halt or perhaps quash the project all together. The only strategy to combat the possibility of political conflict is work towards a peaceful agreement between the Palestinian Authority and the State of Israel. A preliminary agreement and confidence building activities may help to quell political conflict.

Unknowns, in general, and high water costs are the last two constraints mentioned by the interviewees. The water cost is something that must be discussed in the economic feasibility study. If the project goes ahead it must be addressed again by the management structure. Subsidization of the water from the project is a possibility, but it requires much capital in the governmental or management level of the project. The water is a necessary goal of the project and if the cost is too high for people or governments to purchase then it does no good. The possible problem of high water costs must be examined in the beginning to understand if it makes economic sense. It should be addressed in terms of possible subsidies and water efficiencies within each nation. The unknowns of the project may come to light in the future. The management framework must be equipped to deal with novel and unforeseen situations.

All of these measures can help to address the constraints specified by the interview participants from each nation. None of them preclude the project from going ahead, with the exception of the possibility of political conflict. This is something that is very relevant and must be investigated. The management structure of the proposed RDC project must go to lengths to avoid cause for conflict within its governance, but it must also plan for possible conflict in the region and what its course of action would be if the situation arises.

3.2.4.3 Management Structure

Peace Before/After	Jordan	Israel	Palestinian Authority
Peace Before	II		III
Bring peace		I	I
Not bring peace		I	

Table 3 Interview answers, divided by country, concerning the question: "Will the project bring political peace or must peace come before the project?"

Table 3 shows what the participants feel are necessary in order to have a successful cooperative management of the project. The unfortunate part of this truth is that more people feel that peace must come before the project can be established and that the project will not help to instill peace in the region. Few believe that the project holds the possibility of advancing peace. These opinions can be disheartening, but really demonstrate the necessity of having a mutual agreement before entering into the construction and practical phase of the project.

Structural Composition	Jordan	Israel	Palestinian Authority
Cooperative	IIII	IIII	III
Equal representation	III	IIII	IIII
International Involvement		I	I
Jordanian responsibility		II	
Prior agreement		I	II
Independent technical committee			II
Confidence building			I
Private sector management			I
Independent entity	II		II
Regional environmental management			I
Scientific cooperation	III		
Include the people		I	

Table 4 Interview answers, divided by country, concerning the question: "How do you see the project being governed?"

The views on the management structure, expressed by those from the three countries sheds light on how they foresee the management being effective. There were a few points of commonality between what people in each country expressed. The differing points are not exclusive or opposed to one another and they may also be incorporated. The fact that certain answers were given by respondents from only one country serves to highlight differing priorities. The fact that the facets of the management structure shown in Table 4 do not entirely overlap does not imply that the countries have vastly different opinions as to how the management structure should be. It only demonstrates the people from each country have different primary concerns. Many of the elements that were mentioned can be easily combined with one another into a management structure.

The most important elements in Table 4 were expressed by participants from all sides, i.e. cooperation and equal representation. Aside from these two elements, there are facets that maybe combined and intertwined. Those overlapping are the most important, the rest are not exclusive of one another. The aspects of management expressed in the interviews will be included in my recommended management structure in section 4. The inclusion and analysis of these elements are incorporated within the succeeding section of this thesis.

4. Discussion & Conclusions

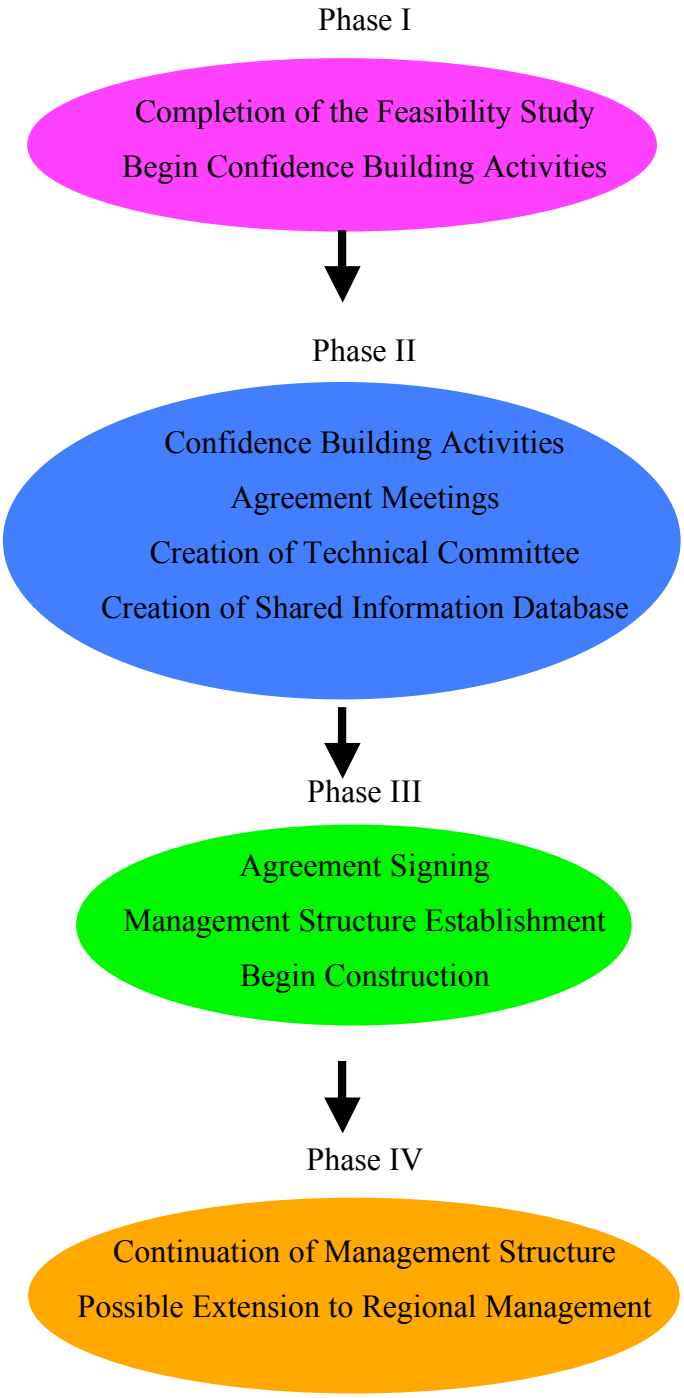
4.1 Discussion of Management Structure: Phasing

The management structure of the proposed RDC project is a complex matter. The analyses of other transboundary projects (section 3.1) provide useful information concerning management tools and how they may be applicable in the RDC project. The interviews that I have conducted and analyzed shed light on how these tools used in the respective case studies may be applied to this region. Additionally, I used the aid of literature written by international organizations about the management of transboundary resources to aid in the conception of what the management structure incorporate.

A complex project, such as this RDC, necessitates a detailed structure and comprehensive planning. I have come to the conclusion that a phasing structure of the project and its planning stages is not only helpful, but also necessary, in view of the expected realization time of this project. Prescribed phasing of a project such as this helps to ensure that goals are set without being perceived as overwhelming. If one phase depends on the completion of the preceding one it will help to create a more easily executable planning structure. A successive implementation structure seems a positive asset in a long-term project, such as the proposed RDC.

The NWSAS provides an excellent example of phasing in a transboundary project. The project accomplished its goals and succeeded in creating a sustainable management structure. The NBI provides an example of a project that did *not* have a clear phasing structure for the planning and execution of the project, and the project has become obstructed by the signing of the CFA. I, by no means, blame the unsuccessful signing of the CFA wholly on this facet, but perhaps it would have helped for the countries to conceptualize and place the signing of the CFA as a high priority rather than a necessary accompaniment to the project.

My recommendation is that phasing could be a useful mechanism for the planning and construction of the proposed RDC. A possible scheme for this phasing could look like this:



The phasing scheme above is not the only possibility for how the project may proceed, but is what I think is a rational and logical order for the implementation of the project. My rationale includes what is taking place at present, i.e. the current feasibility study, as well as what should be taking place, i.e. confidence building activities. I believe that confidence building is a measure that should be started as early as possible, particularly in such a conflict prone situation as is present in this region.

As far as the World Bank feasibility study is concerned, I would have formed a technical committee before the beginning of the former. Hence, the first phase would include forming a technical committee (with sub-committees if necessary) and confidence building activities, as well as forming a shared information database. Concomitant with the former would be the beginning of the feasibility study. The second phase would have included the continuation of confidence building activities and the feasibility study, as well as early meetings to work on a forthcoming agreement. This seems a more rational approach to me, but I have adapted the phasing structure in this thesis to suit the current actions of the project.

The second phase would proceed after the first phase is completed, and if the project was deemed to be feasible. The second phase would continue with confidence building activities and would also include workshops and meetings to begin discussing the contents of a forthcoming agreement between the parties on the goals and guiding principles of the project. This would be a lengthy and difficult task, so it is necessary to begin early in the process. Concomitant to these actions, a technical committee would be formed (possibly including subdivisions) to continue the work of the feasibility study. The committee would be a joint formation, with equal representation from each party and the goal of which would be to gather data and help to advise on the logistical aspects of the project. The data amassed from the feasibility study, historical accounts, and new findings of the technical committee would be incorporated into a shared information database. This information database would pertain to the project and the region and would be accessible in each country via Internet login.

The tertiary phase of the project would begin with the signing of a RDC project agreement between the three nations involved (Jordan, Israel, and the Palestinian Authority—West Bank). This agreement *must* precede the construction of the project, and would also help to establish the management structure itself. The management structure would be established during this phase, and once both of these actions were completed, construction on the project could begin. The necessity of a prior agreement cannot be overstated, and will be expanded upon in section 4.2.2. This phase would also include confidence building, but I did not include it in the phasing scheme because it will not be a main priority, but a continuation of what has been set in place by the first and second phase; the only difference being its oversight by the management structure, instead of a third party.

The fourth phase would be an almost post-planning phase after the construction and operation has been put into place. The project would function (either at a half or full capacity—the option of running at half capacity and later expansion to full capacity has been discussed by those involved with the feasibility study) and the management structure would be stable and sustainable. The project could then begin to expand upon its achievements and possibly help to pave the way for a basin-wide management structure in the Jordan River Basin. This depends on multiple factors, including Syria and Lebanon; however, if cooperation proves successful and positive for these nations (involved in the RDC) it could help to ease the riparians of the Jordan River Basin into the idea of a basin-wide environmental management structure. This phase would also include capacity building measures, but like the third phase they will be a continuation of what was put in place during the prior phases.

4.2 The management structure and phasing explained

4.2.1 Phase I

The first phase, in my scheme, will include the feasibility study and confidence building activities. The feasibility study is currently taking place. I discussed the details of the feasibility study in section 1 of this work. In addition to the aforementioned details, I believe it is necessary to mention the joint nature of the project and its translation to the feasibility study. One of the aims of the project is to bring peace to the region and to do so through cooperation on a joint project. In one of my interviews it was brought to my attention, by someone who is actively working on the feasibility study, that cooperation with Jordan was sought by the Israeli counterpart early on in the study, but this cooperative work was opposed by the French company, Coyne et Bellier.[145]

It is my sincere hope that this kind of impediment to cooperation is not telling of how the project will proceed, but it does throws up an early flag as to something that must be watched for and corrected in the process. The introduction of international or external institutions should aid in the joint efforts between the nations involved, not hinder cooperative efforts. The feasibility study should be a pursuit of joint research between

[145] Hanan Ginat, interview by author, Arava Institute for Environmental Studies, April 26, 2010.

members from Israel, Jordan, and the Palestinian Authority. This is something that should be strived for, although it may be too late as the feasibility study is slated to end in September of 2010.

As for confidence building measures, there are none, to my knowledge, currently taking place. I believe this to be a huge *faux pas* in the current planning of the project. Confidence building is a necessary tool in a region rife with conflict, or the possibility of conflict. In order to have true cooperation, all parties must trust each other. In order to gain trust in one another the parties must have opportunities to work hard and create this trust. Confidence building activities help to provide the opportunities for these social advances. The NBI provides a good example of the use of confidence building measures.

The Confidence Building and Stakeholder Involvement Project (CBSI) is part of the SVP of the NBI. The CBSI is a mechanism that aims to provide

> an avenue for participation of a wide variety of Stakeholders in NBI and by crafting communication programs at two levels; at the investment level and at the regional level to publicize public examples of the benefits of Regional Cooperation as they emerge from the investment programs. The CBSI also aims at providing contemporary regional activities to build trust across country boarders [sic] in the possibility of such cooperation.[146]

This is precisely what the goal of confidence building activities should be. Public involvement and information is essential in beginning this step. During the feasibility study portion of the RDC project, there have been regional public meetings. These meetings have not taken place often nor have they been entirely successful. They are also held within each country separately. Though these do not exemplify confidence building, they show a first step and an attempt to provide the public with access to information and a forum in which to express their views.

Raising public awareness and increasing the amount of information the public is privy to is an essential aspect of confidence building. The meetings that have been held have not done enough to disseminate the correct information regarding the project. For example, many people (aside from the interviewees) whom I speak with have the assumption that project will go ahead with Yitzchak Tshuva's plan to build a "Las Vegas" style canal through the desert. The goals that the public perceives (which are different from the experts and decision-makers whom I interviewed) should be inline with what is

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[146] "Project Brief," Confidence Building and Stakeholders Involvement, Nile Basin Initiative, http://cbsi.nilebasin.org/index.php?option=com_content&task=view&id=13&Itemid=37

actually possible, in terms of the project. If everyone is under the same impressions and understandings of the projects abilities it will help to breed agreement and understanding.

In the future, public fora—either within the region or outside this region—need to take place. These should be initiated by outside forces, such as the UN, World Bank, or other international institutions. The influence of "third parties"/international organizations, trusted by all the parties, in creating confidence building measures cannot be overestimated. The stakeholders must be able to congregate and discuss issues with one another. They must work together in workshops and activities to build "face-time" and grow acquainted and comfortable with one another. Only through ease of knowing one another can trust be built, and this must happen in person. Cooperation, if it were happening in the feasibility study, could be one tool to help bring people together. This is necessary in order to build a strong and sustainable foundation for a cooperative management structure to exist. If the proposed RDC project aims at *real* peace between the parties, confidence building amongst the populous of each nation must also be engaged in.[147] Small projects that would bring the public together on issues, to discuss and work together to achieve goals, are essential.

It is my recommendation that these activities be started immediately with the hope of bringing greater trust between the nations involved in the proposed RDC. Even if the feasibility study proves not to be feasible, the nations will have a foundation of cooperation that has begun and may still positively influence relations within the region.

4.2.2 Phase II

The second phase of the proposed RDC project would proceed following the completion of the feasibility study (marking the end of Phase I). In this phase, activities can be done to prepare for the project, should it be deemed feasible. If the project is not ruled to be feasible at this point, confidence building activities can continue to aid in relationship building in the region in general, but with no agenda regarding the project. This would be a helpful mechanism in the region regardless of a joint project. The region is conflict ridden and the people from each nation experience fear, misunderstanding, and anger when it comes to one another. A good way to break this cycle of social alienation from one another is to let people gather and get to know one another. This would help to

[147] Edelstein.

bring more stability to the region by creating better relationships between the people.

If the project *is* deemed feasible then Phase II will continue where Phase I left off. Confidence building measures will continue, as they will for each phase of the project. These actions will benefit the initial meetings between all of the parties to reach an agreement for the project. The agreement is necessary to have before the project begins (as can be learned from the NBI). It helps to ensure that all the parties are in agreement as to the goals, guiding principles, and jurisdiction of the project.

The agreement should include specific language, with clear understanding and no legal jargon. The ambiguity seen in the NBI CFA is a good example of what not to do in this case. This was demonstrated in section 3.1.2 of this work, but is worth mentioning again. The NBI is now stalled and not able to instate a permanent governance mechanism due to the disagreement over the CFA. This agreement included ambiguous language, which served to further divide rather than unite the countries involved. Ambiguous language can lead to differing interpretations of the agreement text, which can cause difficulty in implementation of an agreement. Language that is ambiguous may also lead to non-compliance with the treaty and prolonged/resumed conflict between the parties involved.[148]

The collapse of the Oslo Accords, and disagreements over the water agreement between Israel and Jordan in their 1994 treaty, exhibit a negative outcome of ambiguity in agreements in this region.[149] Fischhendler points out that, at a certain threshold, ambiguity causes increased hostility and conflict between nations, as seen in the Jordan-Israeli Treaty experience.[150] Due to the nature of the region, and the hostility that exists, it is essential to do everything within reason to quash these situations before they become issues. Fischhendler recommends "soft laws." "Unlike traditional hard laws, they do not create formally binding obligations. Instead, they record only previously agreed-upon principle and objectives."[151] Fischhendler also acknowledges that these types of laws lack an "enforcement framework," which can also be detrimental in the implementation of agreement principles.[152]

The majority of the participants in my interviews also expressed the need for a prior

[148] Cascao, "Ambiguity," 12.
[149] Fischhendler, "Ambiguity," 1-2.
[150] Fischhendler, "Ambiguity," 17.
[151] Fischhendler, "Ambiguity," 22.
[152] Fischhendler, "Ambiguity," 22.

agreement, before the project has begun. This implies a willingness, of certain proportions, to engage in such actions. There were also a majority of participants that agreed that peace would need to come before the project, and this could serve to address this response. Peace would certainly ease the project's implementation, but it also requires much effort and years of agreements and it does not seem to be in the near future. In acknowledgment of this fact, an agreement seems ever more necessary to show the good intentions and agreements between the countries before entering into a joint project, such as the RDC.

The agreement should also take into consideration the perceived goals and constraints by the participants within each country. The goals of the project, as previously discussed, are fairly consensual between the participant nations. With the exception of "Palestinian sovereignty" and "energy" at least two of the three nations agreed on the other goals listed. "Palestinian sovereignty" was mentioned as a goal, by the Palestinians, as a self-determination, not as an expected goal set forth for the project by all parties. "Energy" generation, for use within the countries' grids, is an aspect that, through better public awareness, can be better understood as not being a probable, feasible goal of the project.[153] The other goals are mentioned by at least two out of the three nations and these agreements could be easily remedied in negotiation discussions and workshop meetings.

In terms of the constraints, as they were perceived by the interview participants, "economics" is the only one that is a concern across the board. The other common ones, to two countries, are "political/public will," "politics," and "Jordanian self-interest." These points should be addressed with particular interest, as should the other constraints mentioned. Regardless of whether one country, or several, mentioned a point of concern, they need to be addressed if they are perceived threats to the fruition of the project. Some of the listed constraints (refer to Table 2) will be addressed by the feasibility study (e.g. energy feasibility) and others must be addressed during the agreement phase (e.g. Jordanian self-interest) or later, during the planning and construction stage (e.g. seismic activity).

The parties must address all of these points during discussions and meetings that will help facilitate an agreement that all parties are willing to sign. The aid of international parties can help immensely in such negotiation processes. The 1997 UN Convention on

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[153] Bergstein.
Beyth, "The Red Sea and the Mediterranean-Dead Sea canal project," 5.

the Law of Non-navigational Uses of International Watercourses (see Appendix A), helps to provide a rudimentary framework for an agreement structure, but is does not include the detail necessary for an agreement for the proposed RDC project. Technical experts from the region, as well as international organizations should be included in this process to assist in negotiating a fair agreement.

The agreement should clearly dictate the governance structure that will be put in place. This should be a detailed explanation of the jurisdictional powers, entities involved, the goals and tasks of the institution, how long it is planned to be in operation, and the delineation of responsibilities.[154] The agreement should also take into consideration prior agreements between the countries (e.g. the Jordan Israel Peace Treaty). It is very important that national legislation and governmental organizations are brought into cohesion with the management framework; otherwise tensions may arise within the nations due to misunderstandings of jurisdictional responsibilities.[155] The enforceability of the agreement is also essential; therefore, the goals should "be made measurable."[156] What this means is that the goals of the project should be explicitly stated and easily analyzed. For example, the water allocations can be clearly stated and easily measured to determine the efficacy of the project and management structure. In terms of the Dead Sea, the slow replenishment is also a figure that can be projected and calculated to determine if it is being accomplished. The goal of peace is much harder to quantify than the other two goals. To try to gauge the accomplishment of this goal, projects must be undertaken and the temperature of sentiments toward one another must be assessed. This can be done through surveys conducted at different intervals, also the possible initiation of new transboundary initiatives, the relaxing of travel restrictions, increased movement of people and goods, and other signs of increased positive relationships between the nations involved.

The agreement must also dictate how often the institution is supposed to meet itself and with the sub-committees and boards. The sub-committees and boards should be discussed in so far as what has been arranged at the present time (boards may arise as there becomes need for them in the future). Flexibility of the management structure, to deal with

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[154] Ruth Vollmer, and others, "Institutional Capacity Development in Transboundary Water Management," UN-Water Decade Programme on Capacity Development, 2009, 12.
[155] Ibid, 12.
[156] Ibid, 12.

novel situations must be discussed as well.[157] The funding of the project should also be clearly discussed and stated within the agreement document. Essentially, the minutia of the entire project must be clearly stated within the agreement that will govern the project and it must be signed by the participating nations. This will help to ensure minimal vagueness and opportunities for different interpretations, which can ultimately lead to conflict.[158]

The Technical Committee should be put in place during the second phase of the project as well. Composed of experts who were or were not involved in the feasibility study, the committee should have equal representation from each of the countries. The responsibility and goal should be to synthesize the data gathered during the feasibility studies and conduct further research on the area. The research may have to do with construction technicalities, protection from negative effects that the conduit may cause, or other facets that are deemed necessary for further research during the feasibility study.

Again, as with the confidence building measures, initial aid from a "third party" is extremely helpful in forming cooperation between researchers from all the nations involved. As was possible, but not demonstrated during the feasibility study, third parties seem to have a "genuine urge to participate in peacemaking."[159] It would be important to have the oversight of an international organization or outside party at this initial stage.

The data that the Technical Committee finds on the area should be used in conjunction with past records from each of the countries to build a shared information database. This will be a difficult task in some respects because the data that each country has may differ from one another. This will be a job for the Technical Committee—to reconcile the historical data. The information database should be accessible to all of the people involved with the project, in each country. It could be a website with a login password, or a separate network system. In either case, those who work within the management institution should have equal and constant access to the maps and data housed in the shared information database.

The Technical Committee can also operate as a confidence building measure—

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[157] Stephen C McCaffrey, "The Need for Flexibility in Freshwater Treaty Regimes," *Natural Resources Forum* 27 (2003): 160.
[158] Vollmer, 13.
[159] Allison L. C. de Cerreño and Alexander Keynan, eds., "Scientific Cooperation, State Conflict: the Roles of Scientists in Mitigating International Discord," *Annals of the New York Academy of Sciences* 866 (1998): 211.

technical experts from each country work together. Their synthesis of data could be a cause for small conflict, but overtime may help to dismantle residual feelings of conflict over past water resource and territory data. Additionally, the shared information database will help to instill trust in one another because all will have access to the same information.

These steps will be lengthy and demand a lot of work, but are necessary in order to build a sustainable cooperative management structure. These steps are grouped within Phase II and should be completed before Phase III begins.

4.2.3 Phase III

Phase III is the initial phase of the actual construction of the project. There are certain prerequisites to the physical construction of the project. These include the signing of an agreement between the three nations, as well as the establishment of the cooperative management institution. These steps must happen within the third phase before the construction begins.

The signing of the agreement will be a difficult process. The initial meetings, begun during Phase II, will continue into Phase III. The signing of an agreement is essential to the sustainability of the cooperative management structure. The NBI provides an excellent example of a cooperative management structure that is halted mid-process due to the initiation of the project prior to the signing of the CFA. In the case of the NBI, the attempt to backtrack and negotiate the signing of the CFA has even brought about old conflicts that were previously resolved.[160] One thing to be careful of, as is seen in the NBI, is the wariness of the countries in the slow process of the cooperation agreement. This has caused a lack of production of benefits and this could ultimately encourage unilateral projects over cooperative multilateral work.[161] The agreement will entail a long process, but should not drag out long enough to discourage the parties from participating in the project. In the agreement, as mentioned above, the management structure of the project should be explicitly explained and agreed upon. The management structure is the next stage in Phase III that must be established prior to the initiation of construction.

The management structure should take the form of a Commission. A Commission, as opposed to an "Authority" or a "Coordinating Committee" or "Council" is to be

[160] Cascao, "Ambiguity," 12.
[161] Cascao, "Power Relations," 29.

employed when "information and water policies still need further development" and "water resource planning and management practices are not well detailed."[162] An "Authority" absorbs other organizations under its umbrella, while a "Committee" or "Council" assumes there are existing management agencies that are functioning effectively.[163] A "Commission" is the type of structure the IJC has employed in the Great Lakes Basin.

The management structure should be one of equal representation, as per the interview respondents' answers, as well as the case studies. The idea of Jordan enjoying *prima inter pares* in the management structure, as was proposed by a few interviewees, will not help to instill the trust of all sides in a cooperative management structure; however, it may be necessary to extend Jordan's position in terms of maintenance and disaster management because of the geographic reality of the conduit (this should be discussed and agreed upon in the cooperative framework). The Red Sea-Dead Sea Conduit Commission (hereafter, RDCC) should be composed of one (or two) commissioner(s) from each country. Each country should be equally represented on the commission's board. The Technical Committee, established during Phase II of the project, will also be included within the RDCC.

The jurisdictional powers of the RDCC should be limited to the RDC project. This project is different from other transboundary water management structures, because it is a man-made construction. That being said, the responsibilities include the possible effects on the Dead Sea, Red Sea, Arava Valley and its underground aquifers, in addition to the physical structure and the distribution of water from the project. The proactive planning, maintenance, and, if necessary, remediation activities are all within the jurisdiction and responsibilities of the RDCC. These measures extend to the socio-economic implications within the project area as well. The people and surrounding economies, in proximity to the conduit, must be considered when determining protocols and future plans as well as remediation in the case of a negative future development.

The commission should meet at least twice a year during the initial years of the project (5-10 years). They will be advised by the Technical Committee and be the decision-makers for aspects concerning the project. Each country should have a headquarter for their commissioners and associates who work on the RDCC. The meetings

[162] Vollmer, 9.
[163] Ibid, 9.

should be rotated amongst these headquarters so that there is no bias between the nations. The commission should vote on decisions and act on a consensual basis. The decisions that are made by the RDCC should be binding to each country once the commissioners agree upon them. This is an essential element in order to ensure the enforceability of the RDCC and its decisions (meaning not employing "soft law" because of their problems with enforceability). The impartiality of the organization, distance from the government and politics, is essential in the agreement of countries to binding acts.

The initial establishment and funding for the project and the RDCC should come from outside actors (i.e. the World Bank, UN, GEF, etc.). This will address the view that the world has a responsibility to help fund this project, as stated by respondents in my interviews. This will also ensure external incentives for the countries to cooperate. The project benefits—new water, saving the Dead Sea, and increased stability within the region—will be driving factors for the countries themselves. The internal incentives are those that were discussed in the section 3.2 of this work—the goals as each country sees them. This example of dual incentives comes from the NBI case and shows a positive relationship in terms of the project's fruition and the countries' cooperation.

An important element to emphasize in the RDCC structure is the fact that it will be an independent entity, as will the Technical Committee. The government in each country (be it the Jordan Valley Authority, the Ministry of Water, or the Palestinian Water Authority) will appoint the commissioner(s) to the Commission. The government from each country will likewise appoint the Technical Committee members. Though the governments will appoint these officials, as in the case of the IJC, they will act independently and in the best interests for the project, not their respective governments.

Once the management structure has been established, other sub-committees and boards may be created to cope with certain aspects of the project. For example, contingency planning and disaster management will be under the charge of the RDCC, but a sub-group may be created in order to deal with such matters. The RDCC will also take the charge of the confidence building activities from outside institutions, once established. The RDCC may wish to devise a new sub-organization to deal with such matters. It is important to note that the confidence building measures will not end with the establishment of the RDCC, they will continue to help increase person-person contact in order to instill greater stability and warmer relationships within the region.

Proactive planning and management will also be a responsibility of the RDCC. The

commission must devise a contingency plan to meet possible negative future developments that may impact the project or that the project may cause on the region. Though the feasibility study has not been completed, the seismic activity and seasonal flooding in the region surrounding where the conduit will most likely be built is an aspect that can be discussed even now (before the establishment of the RDCC). These two factors must be considered in the construction plans and route definition of the conduit. At the conclusion of the feasibility study, the fine details of the project will be known and contingencies of the project may be recognized and planned for by the commission.

The RDCC would also be in charge of conflict mediation between the participating nations, concerning the RDC. They would serve to correct and cool tensions between the parties and further the cooperative mechanism. They should also hold public meetings, to include the public and listen to their concerns and opinions at least once a year. These meetings can be held within each country and in the native language of the country, in order for better public participation. The RDCC would also be responsible for the security associated with the physical structure of the project.

There is also the possibility that the RDCC may, empowered through the governments of the three nations, function as a private entity. A public-private partnership, or quasi-governmental structure, can endow the RDCC with many advantageous characteristics. A semi-private structure can help ensure its independence from the participatory governments as well as efficiency within the organization's management.[164] There are multiple examples of such partnerships already in existence within Israel—The Desalination plants of Hadera, Ashkelon, Palmachim, and Sorek.[165] A public-private partnership is not always appropriate, but may provide beneficial aspects in many cases of resource management. The appropriateness of a public-private partnership, in terms of the RDC and RDCC, should be thoroughly researched and discussed by the participatory polities and decided upon in the framework agreement for the project.

Once these measures have been put in place—the signing of the agreement and the establishment of the RDCC—the construction stage of the project may begin. The

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[164] "Fundamental and Issues of Public-Private Partnerships (PPP's)," The National Council for Public-Private Partnerships," http://www.ncppp.org/howpart/PPPfundamentals.html.

[165] "Projects," Accountant General Public-Private Partnership Projects, Ministry of Finance, http://ppp.mof.gov.il/Mof/PPP/MofPPPTopNavEnglish/MofPPPProjectsEnglish/PPPProjectsListEng/MitkaneiAtpalatMaim/SorekDesalination/Description.htm?WBCMODE=PresentationUnpublished

finalized route will have been discussed by the Technical Committee and included in the framework agreement between the participating nations. Any disputes between the time of the agreement and the construction phase will be handled by the RDCC. The construction will be costly and a long process. The RDCC is responsible for securing funding from outside sources—the countries do not have the near 4 billion dollars that the project will require for construction.[166] (The RDCC would also need to grapple with the energy generation necessary for the pumping of the water.) The construction must take into consideration the fault lines along the Arava Valley, in terms of engineering and contingency planning.

These measures all comprise Phase III of the RDC project. This phase is the last of the initial phases of the project. Phase IV comes after the completion of Phase III and the construction of the project.

4.2.4 Phase IV

Phase IV is the continuation of the project and its management in a sustainable manner for the future. It comes last and has more to do with the future of the region and cooperation, but obviously includes the project. Phase IV, in addition to including the continuation of the RDCC and possible incorporation/expansion to the region, includes continued confidence building. Confidence building measures are an essential asset to the project and normalized relation within the region. The RDCC will continue their confidence building activities within the region.

The RDCC will also continue in the future, without the necessary initial aid of foreign institutions. With the proper insight and oversight in the Phase III establishment of the RDCC, it will be a sustainable institution, capable of independently managing the RDC far into the future. The RDCC may pave the way for larger cooperation within the region. Perhaps with the cooperation exhibited in the RDC project, a stronger case could be made for a wider Jordan River Basin management structure. This could include the entire basin—meaning Lebanon, Syria, Jordan, Israel, and the Palestinian Authority. The likes of this happening are in the future, but the beginnings could be with the fruition of the RDC project and the establishment of the RDCC.

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[166] Asmar, 327, 333.
E.S. Hrayshat, "Prospects of Hydropower Utilization for Electricity Generation in Jordan," *Energy Sources, Part B*, 4 (2009): 80.

4.3 Concluding Remarks

This M.A. study has provided an analysis and suggested framework for management of the proposed Red Sea-Dead Sea Conduit project. The modern history of the region is rife with conflict over territory, water, religion, etc. The idea of the project is to try to bridge the divides between Jordan, Israel, and the Palestinian Authority by creating a cooperative project that will provide water for the three polities, as well as replenish the level of the Dead Sea. This project has the potential to bring great benefits to the region, but also presents many problems.

There is no precedent set for a project of this kind, in terms of management, though valuable lessons can be learned from other transboundary projects involving water, as evaluated in this thesis. The Great Lakes Basin's IJC provided a useful structural format for the cooperative management of the proposed RDC. The Nile Basin Initiative demonstrated the importance of a cooperative agreement prior to project initiation. The North-Western Sahara Aquifer System provided a detailed example of a phasing structure. Lastly, the Rio Grande Basin provided a negative example for the proposed Red Dead Conduit, because the governance structure of the former proved not to be conducive for true cooperative management.

International laws are not really applicable in this situation, because they are not specific enough to apply to an *artificially constructed water conduit* involving cooperative transboundary management and they are largely unenforceable. This project requires a unique approach in order to be sustainable. I have outlined above the extent to which the selected projects can contribute to the conception of a new management structure.

The inclusion of local people and their views was essential in order to determine what type of structure would fit *here*. The interview respondents helped immensely in this process, and it is through their answers that I learned what to consider in terms of management structure. The goals of the project, as perceived by the interviewees, were, for the most part, closely related and easily intertwined. The constraints noted were legitimate and some may be more easily addressed, like the energy feasibility, while others like politics will take a great amount of effort. None of the constraints stated presented a clear obstruction to the project's fruition; rather they provided points that must be addressed in the planning and execution of the project. The ideas of the management

structure largely overlapped and helped give perspective on how the people of the region feel the project would best be managed.

The management structure should be a commission, which I have dubbed here the RDCC. This commission will be responsible for the conduit and its necessary components. The RDCC will be an apolitical body with equal representation from the three polities (Jordan, Israel, and the Palestinian Authority—the West Bank). Within the RDCC will be a Technical Committee which, being equally representative as well, will gather data and help to maintain the physical aspects of the project. The Technical Committee will also aid in the establishment of a shared information database, to which each country will have equal access. This will ensure the transparency of the project and quell mistrust between the participatory parties.

The RDCC should meet at least biannually for the first 5-10 years of the project and determine what is necessary going forward. These meetings should take place within the headquarters of each nation, on a rotational basis. The actions decided upon within the meeting should be binding upon the three participatory nations. These actions may be carried out by the sub-committees housed under the RDCC. The sub-committees will be established upon necessity, but may address issues such as contingency planning, conflict mediation, confidence building activities, etc.

The RDCC should be established by a cooperative agreement signed by the participatory parties that empowers the organization with authority over the RDC project and delineates its jurisdiction. The agreement must be clear, with non-ambiguous language, in order to avoid later discrepancies and possible conflict. The agreement should also include the expressed goals of the participatory nations in their involvement in the project. Though the expressed goals (aside from those mentioned in the Terms of Reference, i.e. economic profit, employment, etc.) may differ amongst the parties, none are mutually exclusive of another and they may be combined with relative ease. The possible constraints to approval and construction of the project—such as the cost of water and bureaucratic procedure—should be addressed in the cooperative agreement as well.

Confidence building activities should be initiated early in the process and be constant throughout the entirety of the project. Confidence building helps to instill trust between the nations and will help in the forging of a cooperative agreement. These activities may take the form of public fora, celebratory events, or conferences/workshops. These activities should involve the public at large as well as the technical, academic, and political

actors involved in the project.

The project should also highlight sustainability as a major goal. Thus, the RDCC should be established and empowered for long-term existence. The RDCC may help to initiate a wider basin cooperation involving *all* the riparians of the Jordan River Basin (Syria and Lebanon included). This could help bring about more peaceful relationships between the countries in the region.

The multiple facets necessary in the establishment of such a complex project are suited to an incremental process. The project should proceed with a four-phased structure, beginning with the current feasibility study and confidence building activities. This first phase is necessary to initiate contact between the participating parties and build trust, while establishing the status of the project's feasibility. If the project is deemed feasible, the second phase should entail further confidence building activities, negotiation meetings towards reaching a cooperative agreement, and the establishment of a technical committee. The third phase will entail the signing of a cooperative agreement, the establishment of the management structure, and the construction of the conduit. The fourth phase aims to support the project's sustainability and to aid in the possible establishment of Jordan River Basin cooperation.

A phasing structure, as the one I have proposed here, shows advantages of a step-wise approach in the anticipated construction and duration of this complex project. The four phases will aid in the effective negotiation of the planning and execution process of the RDC project.

The project, with proper oversight, may prove to be a positive solution to the water scarcity present in the region, the decline of the Dead Sea, and the currently cold (and at times hostile) relations between the polities within the region. If the project is deemed feasible, it is my hope that the work that has been presented in this thesis will be considered in the planning and management of the project. If the project is not deemed feasible and does not come to fruition, it is my hope that some of my ideas outlined here may be found useful in establishing future environmental cooperation in the region.

Images

Image 1[167]

[167] Samantha Tress, "The Dead Sea Dilemma-Part II," The Earth Institute Columbia, April 6, 2010. http://blogs.ei.columbia.edu/water/2010/04/06/the-dead-sea-dilemma-part-ii/

Image 2[168]

[168]"Before June 1967,"
http://www.bibletalks4u.com/audio/CMCD/05/images/IsraelBeforeJune67.gif

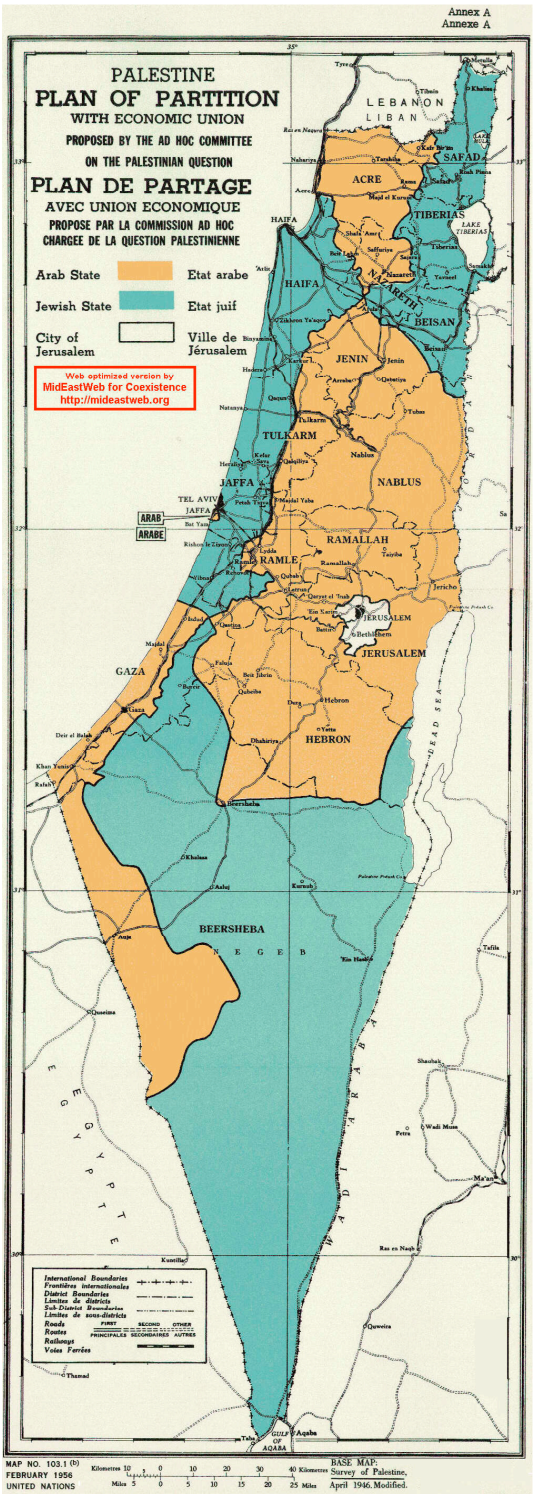


Image 3[169]

[169] "Detail Map of UNSCOP Partition Plan for Palestine- September 1947." http://www.mideastweb.org/un_palestine_partition_map_1947.htm

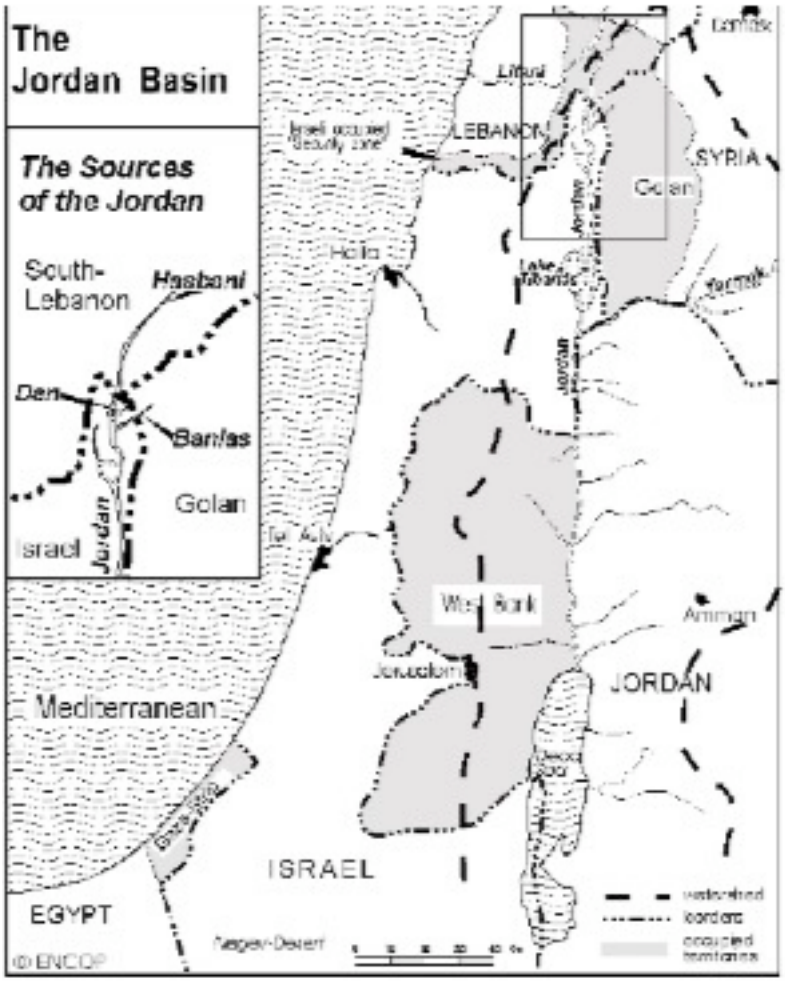
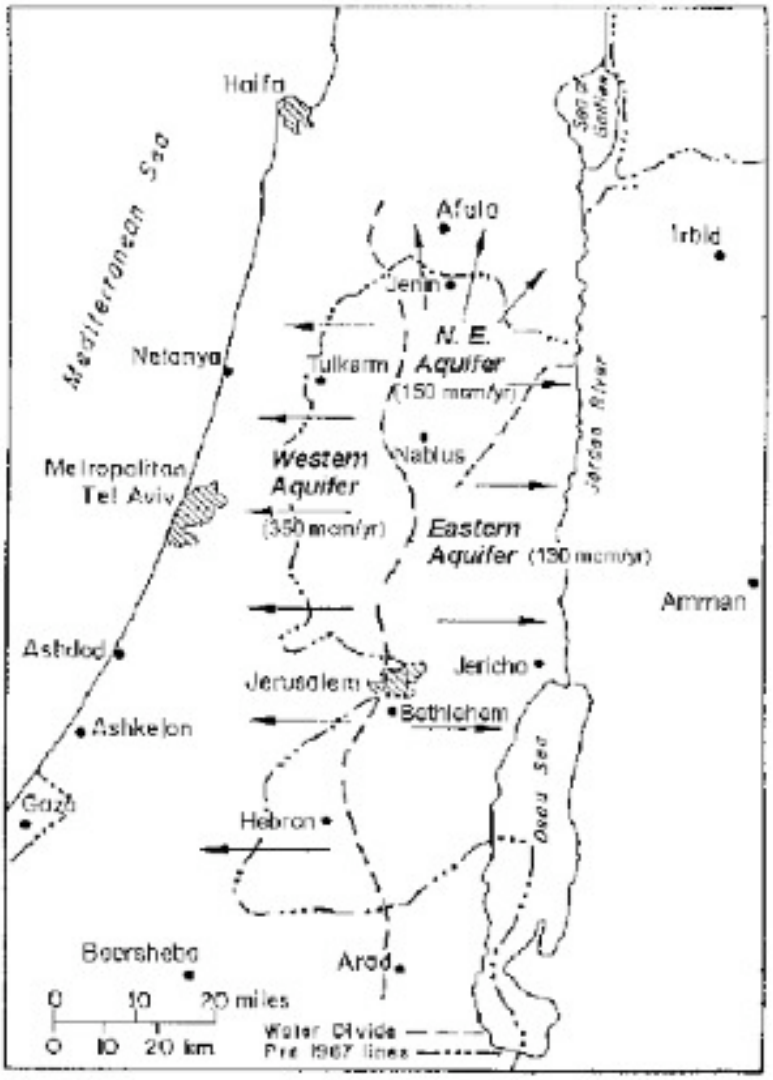


Image 4[170]

[170] Libiszewski, 11.

The Aquifer of the West Bank



Basing on: Assaf, Karen; al Khatib, Nader; Kally, Elisha; Shuval, Hillel. A Proposal for the Development of a Regional Water Master Plan. IPCRI: Jerusalem 1993.

Image 5[171]

[171] Libiszewski, 17.

Image 6[172]

[172] "The Five Great Lakes," University of Chicago, http://cuip.uchicago.edu/wit/2000/teams/chi-pass/fivelakes.htm

Image 7[173]

[173] "Nile River Basin," http://siteresources.worldbank.org/INTAFRNILEBASINI/About%20Us/21082459/Nile_River_Basin.htm

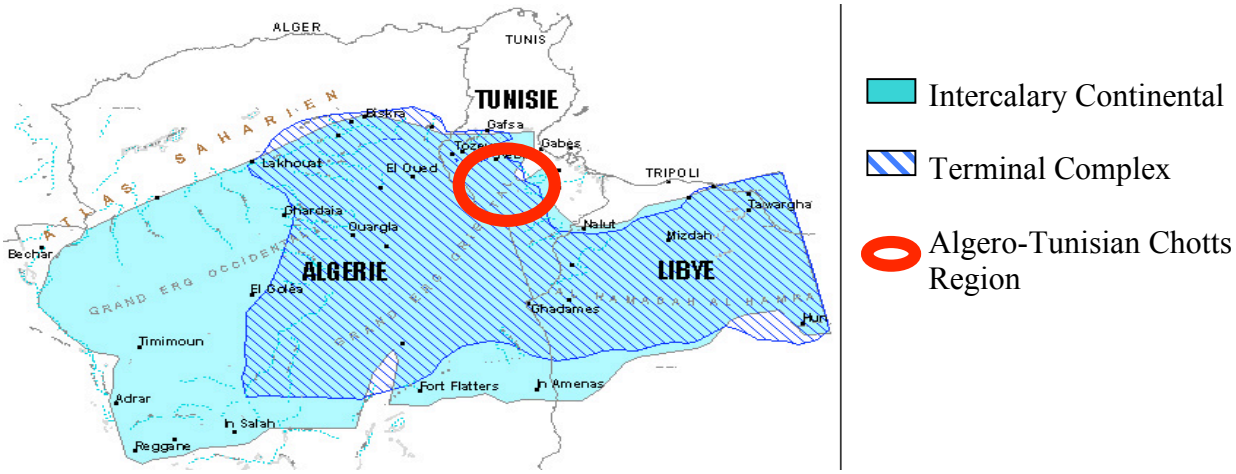


Image 8[174]

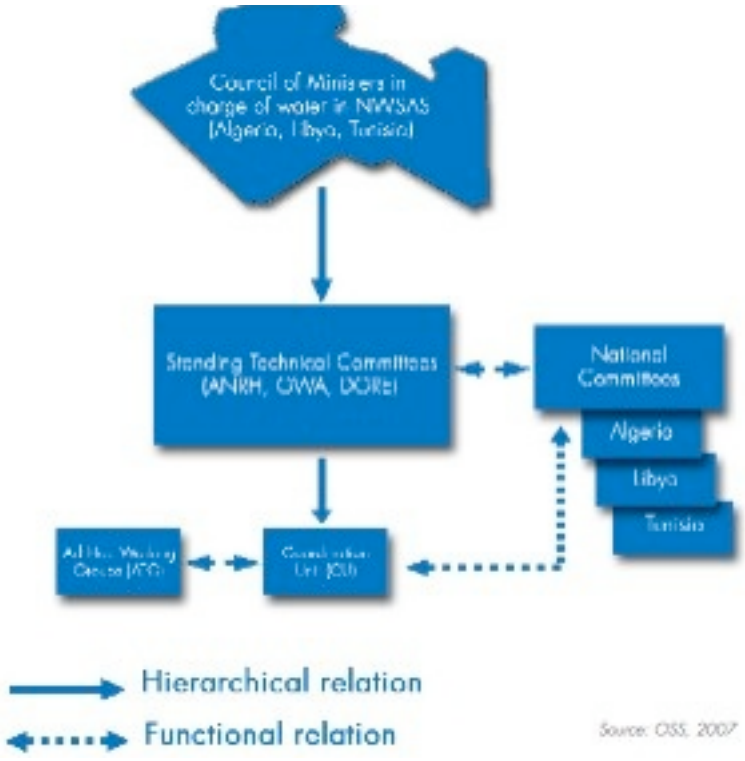


Image 9[175]

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[174] "The NWSAS Map," OSS, http://www.ossonline.org/index.php?option=com_content&task=view&id=33&Itemid=443&lang=en

[175] "The North-Western Sahara Aquifer System (Algeria, Tunisia, Libya): Concerted Management of a Transboundary Water Basin."

Rio Grande Basin

Image 10[176]

[176] "Shared Water Flowing Again," Texas Commission on Environmental Quality, *Natural Outlook*, Winter 2006, http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/pd/020/06-01/sharedwater.html

Appendix A- Convention on the Law of the Non-navigational Uses of International Watercourses

1997

Adopted by the General Assembly of the United Nations on 21 May 1997.
Not yet in force. See General Assembly resolution 51/229, annex, Official Records of the General Assembly, Fifty-first Session, Supplement No. 49 (A/51/49).

2005

Convention on the Law of the Non-navigational Uses of International Watercourses

Adopted by the General Assembly of the United Nations on 21 May 1997

The Parties to the present Convention, Conscious of the importance of international watercourses and the non-navigational uses thereof in many regions of the world, Having in mind Article 13, paragraph 1 (a), of the Charter of the United Nations, which provides that the General Assembly shall initiate studies and make recommendations for the purpose of encouraging the progressive development of international law and its codification, Considering that successful codification and progressive development of rules of international law regarding non-navigational uses of international watercourses would assist in promoting and implementing the purposes and principles set forth in Articles 1 and 2 of the Charter of the United Nations, Taking into account the problems affecting many international watercourses resulting from, among other things, increasing demands and pollution, Expressing the conviction that a framework convention will ensure the utilization, development, conservation, management and protection of international watercourses and the promotion of the optimal and sustainable utilization thereof for present and future generations, Affirming the importance of international cooperation and good-neighbourliness in this field, Aware of the special situation and needs of developing countries, Recalling the principles and recommendations adopted by the United Nations Conference on Environment and Development of 1992 in the Rio Declaration and Agenda 21, Recalling also the existing bilateral and multilateral agreements regarding the non-navigational uses of international watercourses, Mindful of the valuable contribution of international organizations, both governmental and non- governmental, to the codification and progressive development of international law in this field, Appreciative of the work carried out by the International Law Commission on the law of the non- navigational uses of international watercourses, Bearing in mind United Nations General Assembly resolution 49/52 of 9 December 1994, Have agreed as follows:

PART I.

INTRODUCTION

Article 1

Scope of the present Convention

1.The present Convention applies to uses of international watercourses and of their waters for purposes other than navigation and to measures of protection, preservation and management related to the uses of those watercourses and their waters.

2.The uses of international watercourses for navigation is not within the scope of the present Convention except insofar as other uses affect navigation or are affected by navigation.

Article 2

Use of terms

For the purposes of the present Convention:

(a) “Watercourse” means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus;

(b) “International watercourse” means a watercourse, parts of which are situated in different States;

(c) “Watercourse State” means a State Party to the present Convention in whose territory part of an international watercourse is situated, or a Party that is a regional economic integration organization, in the territory of one or more of whose Member States part of an international watercourse is situated;

(d) “Regional economic integration organization” means an organization constituted by sovereign States of a given region, to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized in accordance with its internal procedures, to sign, ratify, accept, approve or accede to it.

Article 3

Watercourse agreements

1.In the absence of an agreement to the contrary, nothing in the present Convention shall affect the rights or obligations of a watercourse State arising from agreements in force for it on the date on which it became a party to the present Convention.

2.Notwithstanding the provisions of paragraph 1, parties to agreements referred to in paragraph 1 may, where necessary, consider harmonizing such agreements with the basic principles of the present Convention.

3.Watercourse States may enter into one or more agreements, hereinafter referred to as “watercourse agreements”, which apply and adjust the provisions of the present Convention to the characteristics and uses of a particular international watercourse or part thereof.

4.Where a watercourse agreement is concluded between two or more watercourse States, it shall define the waters to which it applies. Such an agreement may be entered into with respect to an entire international watercourse or any part thereof or a particular project, programme or use except insofar as the agreement adversely affects, to a significant extent, the use by one or more other watercourse States of the waters of the watercourse, without their express consent.

5.Where a watercourse State considers that adjustment and application of the provisions of the present Convention is required because of the characteristics and uses of a particular international watercourse, watercourse States shall consult with a view to negotiating in good faith for the purpose of concluding a watercourse agreement or agreements.

6.Where some but not all watercourse States to a particular international watercourse are parties to an agreement, nothing in such agreement shall affect the rights or obligations under the present Convention of watercourse States that are not parties to such an agreement.

Article 4

Parties to watercourse agreements

1.Every watercourse State is entitled to participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire international watercourse, as well as to participate in any relevant consultations.

2.A watercourse State whose use of an international watercourse may be affected to a significant extent by the implementation of a proposed watercourse agreement that applies

only to a part of the watercourse or to a particular project, programme or use is entitled to participate in consultations on such an agreement and, where appropriate, in the negotiation thereof in good faith with a view to becoming a party thereto, to the extent that its use is thereby affected.

PART II.

GENERAL PRINCIPLES

Article 5

Equitable and reasonable utilization and participation

1.Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse.

2.Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present Convention.

Article 6

Factors relevant to equitable and reasonable utilization

1.Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:

(a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;

(b) The social and economic needs of the watercourse States concerned;

(c) The population dependent on the watercourse in each watercourse State;

(d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;

(e) Existing and potential uses of the watercourse;

(f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;

(g) The availability of alternatives, of comparable value, to a particular planned or existing use.

2.In the application of article 5 or paragraph 1 of this article, watercourse States concerned shall, when the need arises, enter into consultations in a spirit of cooperation.

3.The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

Article 7

Obligation not to cause significant harm

1.Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States.

2.Where significant harm nevertheless is caused to another watercourse State, the States whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

Article 8
General obligation to cooperate
1.Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.
2.In determining the manner of such cooperation, watercourse States may consider the establishment of joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.
Article 9
Regular exchange of data and information
1.Pursuant to article 8, watercourse States shall on a regular basis exchange readily available data and information on the condition of the watercourse, in particular that of a hydrological, meteorological, hydrogeological and ecological nature and related to the water quality as well as related forecasts.
2.If a watercourse State is requested by another watercourse State to provide data or information that is not readily available, it shall employ its best efforts to comply with the request but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.
3.Watercourse States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other watercourse States to which it is communicated.
Article 10
Relationship between different kinds of uses
1.In the absence of agreement or custom to the contrary, no use of an international watercourse enjoys inherent priority over other uses.
2.In the event of a conflict between uses of an international watercourse, it shall be resolved with reference to articles 5 to 7, with special regard being given to the requirements of vital human needs.
PART III.
PLANNED MEASURES
Article 11
Information concerning planned measures
Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse.
Article 12
Notification concerning planned measures with possible adverse effects Before a watercourse State implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including the results of any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned measures.
Article 13
Period for reply to notification
Unless otherwise agreed:
(a) A watercourse State providing a notification under article 12 shall allow the notified

States a period of six months within which to study and evaluate the possible effects of the planned measures and to communicate the findings to it;
(b) This period shall, at the request of a notified State for which the evaluation of the planned measures poses special difficulty, be extended for a period of six months.
Article 14
Obligations of the notifying State during the period for reply During the period referred to in article 13, the notifying State:
(a) Shall cooperate with the notified States by providing them, on request, with any additional data and information that is available and necessary for an accurate evaluation; and
(b) Shall not implement or permit the implementation of the planned measures without the consent of the notified States.
Article 15
Reply to notification The notified States shall communicate their findings to the notifying State as early as possible within the period applicable pursuant to article 13. If a notified State finds that implementation of the planned measures would be inconsistent with the provisions of articles 5 or 7, it shall attach to its finding a documented explanation setting forth the reasons for the finding.
Article 16
Absence of reply to notification
1.If, within the period applicable pursuant to article 13, the notifying State receives no communication under article 15, it may, subject to its obligations under articles 5 and 7, proceed with the implementation of the planned measures, in accordance with the notification and any other data and information provided to the notified States.
2.Any claim to compensation by a notified State which has failed to reply within the period applicable pursuant to article 13 may be offset by the costs incurred by the notifying State for action undertaken after the expiration of the time for a reply which would not have been undertaken if the notified State had objected within that period.
Article 17
Consultations and negotiations concerning planned measures
1.If a communication is made under article 15 that implementation of the planned measures would be inconsistent with the provisions of article 5 or 7, the notifying State and the State making the communication shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation.
2.The consultations and negotiations shall be conducted on the basis that each State must in good faith pay reasonable regard to the rights and legitimate interests of the other State.
3.During the course of the consultations and negotiations, the notifying State shall, if so requested by the notified State at the time it makes the communication, refrain from implementing or permitting the implementation of the planned measures for a period of six months unless otherwise agreed.
Article 18
Procedures in the absence of notification
1.If a watercourse State has reasonable grounds to believe that another watercourse State is planning measures that may have a significant adverse effect upon it, the former State may request the latter to apply the provisions of article 12. The request shall be accompanied by a documented explanation setting forth its grounds.
2.In the event that the State planning the measures nevertheless finds that it is not under an obligation to provide a notification under article 12, it shall so inform the other State, providing a documented explanation setting forth the reasons for such finding. If this

finding does not satisfy the other State, the two States shall, at the request of that other State, promptly enter into consultations and negotiations in the manner indicated in paragraphs 1 and 2 of article 17.

3.During the course of the consultations and negotiations, the State planning the measures shall, if so requested by the other State at the time it requests the initiation of consultations and negotiations, refrain from implementing or permitting the implementation of those measures for a period of six months unless otherwise agreed.

Article 19

Urgent implementation of planned measures

1.In the event that the implementation of planned measures is of the utmost urgency in order to protect public health, public safety or other equally important interests, the State planning the measures may, subject to articles 5 and 7, immediately proceed to implementation, notwithstanding the provisions of article 14 and paragraph 3 of article 17.

2.In such case, a formal declaration of the urgency of the measures shall be communicated without delay to the other watercourse States referred to in article 12 together with the relevant data and information.

3.The State planning the measures shall, at the request of any of the States referred to in paragraph 2, promptly enter into consultations and negotiations with it in the manner indicated in paragraphs 1 and 2 of article 17.

PART IV.

PROTECTION, PRESERVATION AND MANAGEMENT

Article 20

Protection and preservation of ecosystems

Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.

Article 21

Prevention, reduction and control of pollution

1.For the purpose of this article, “pollution of an international watercourse” means any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct.

2.Watercourse States shall, individually and, where appropriate, jointly, prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any beneficial purpose or to the living resources of the watercourse. Watercourse States shall take steps to harmonize their policies in this connection.

3.Watercourse States shall, at the request of any of them, consult with a view to arriving at mutually agreeable measures and methods to prevent, reduce and control pollution of an international watercourse, such as:

(a) Setting joint water quality objectives and criteria;

(b) Establishing techniques and practices to address pollution from point and non-point sources;

(c) Establishing lists of substances the introduction of which into the waters of an international watercourse is to be prohibited, limited, investigated or monitored.

Article 22

Introduction of alien or new species Watercourse States shall take all measures necessary to prevent the introduction of species, alien or new, into an international watercourse which may have effects detrimental to the ecosystem of the watercourse resulting in significant harm to other watercourse States.

Article 23

Protection and preservation of the marine environment Watercourse States shall, individually and, where appropriate, in cooperation with other States, take all measures with respect to an international watercourse that are necessary to protect and preserve the marine environment, including estuaries, taking into account generally accepted international rules and standards.

Article 24

Management

1.Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.

2.For the purposes of this article, “management” refers, in particular, to:

(a) Planning the sustainable development of an international watercourse and providing for the implementation of any plans adopted; and

(b) Otherwise promoting the rational and optimal utilization, protection and control of the watercourse.

Article 25

Regulation

1.Watercourse States shall cooperate, where appropriate, to respond to needs or opportunities for regulation of the flow of the waters of an international watercourse.

2.Unless otherwise agreed, watercourse States shall participate on an equitable basis in the construction and maintenance or defrayal of the costs of such regulation works as they may have agreed to undertake.

3.For the purposes of this article, “regulation” means the use of hydraulic works or any other continuing measure to alter, vary or otherwise control the flow of the waters of an international watercourse.

Article 26

Installations

1.Watercourse States shall, within their respective territories, employ their best efforts to maintain and protect installations, facilities and other works related to an international watercourse.

2.Watercourse States shall, at the request of any of them which has reasonable grounds to believe that it may suffer significant adverse effects, enter into consultations with regard to:

(a) The safe operation and maintenance of installations, facilities or other works related to an international watercourse; and

(b) The protection of installations, facilities or other works from wilful or negligent acts or the forces of nature.

PART V.

HARMFUL CONDITIONS AND EMERGENCY SITUATIONS

Article 27

Prevention and mitigation of harmful conditions Watercourse States shall, individually and, where appropriate, jointly, take all appropriate measures to prevent or mitigate conditions related to an international watercourse that may be harmful to other watercourse States, whether resulting from natural causes or human conduct, such as flood or ice conditions, water-borne diseases, siltation, erosion, salt-water intrusion, drought or desertification.

Article 28

Emergency situations

1.For the purposes of this article, “emergency” means a situation that causes, or poses an imminent threat of causing, serious harm to watercourse States or other States and that results suddenly from natural causes, such as floods, the breaking up of ice, landslides or earthquakes, or from human conduct, such as industrial accidents.
2.A watercourse State shall, without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of any emergency originating within its territory.
3.A watercourse State within whose territory an emergency originates shall, in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate harmful effects of the emergency.
4.When necessary, watercourse States shall jointly develop contingency plans for responding to emergencies, in cooperation, where appropriate, with other potentially affected States and competent international organizations.
PART VI.
MISCELLANEOUS PROVISIONS
Article 29
International watercourses and installations in time of armed conflict International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.
Article 30
Indirect procedures In cases where there are serious obstacles to direct contacts between watercourse States, the States concerned shall fulfil their obligations of cooperation provided for in the present Convention, including exchange of data and information, notification, communication, consultations and negotiations, through any indirect procedure accepted by them.
Article 31
Data and information vital to national defence or security Nothing in the present Convention obliges a watercourse State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good faith with the other watercourse States with a view to providing as much information as possible under the circumstances.
Article 32
Non-discrimination Unless the watercourse States concerned have agreed otherwise for the protection of the interests of persons, natural or juridical, who have suffered or are under a serious threat of suffering significant transboundary harm as a result of activities related to an international watercourse, a watercourse State shall not discriminate on the basis of nationality or residence or place where the injury occurred, in granting to such persons, in accordance with its legal system, access to judicial or other procedures, or a
right to claim compensation or other relief in respect of significant harm caused by such activities carried on in its territory.
Article 33
Settlement of disputes
1.In the event of a dispute between two or more parties concerning the interpretation or application of the present Convention, the parties concerned shall, in the absence of an applicable agreement between them, seek a settlement of the dispute by peaceful means in accordance with the following provisions.

2.If the parties concerned cannot reach agreement by negotiation requested by one of them, they may jointly seek the good offices of, or request mediation or conciliation by, a third party, or make use, as appropriate, of any joint watercourse institutions that may have been established by them or agree to submit the dispute to arbitration or to the International Court of Justice.
3.Subject to the operation of paragraph 10, if after six months from the time of the request for negotiations referred to in paragraph 2, the parties concerned have not been able to settle their dispute through negotiation or any other means referred to in paragraph 2, the dispute shall be submitted, at the request of any of the parties to the dispute, to impartial fact-finding in accordance with paragraphs 4 to 9, unless the parties otherwise agree.
4.A Fact-finding Commission shall be established, composed of one member nominated by each party concerned and in addition a member not having the nationality of any of the parties concerned chosen by the nominated members who shall serve as Chairman.
5.If the members nominated by the parties are unable to agree on a Chairman within three months of the request for the establishment of the Commission, any party concerned may request the Secretary- General of the United Nations to appoint the Chairman who shall not have the nationality of any of the parties to the dispute or of any riparian State of the watercourse concerned. If one of the parties fails to nominate a member within three months of the initial request pursuant to paragraph 3, any other party concerned may request the Secretary-General of the United Nations to appoint a person who shall not have the nationality of any of the parties to the dispute or of any riparian State of the watercourse concerned. The person so appointed shall constitute a single-member Commission.
6.The Commission shall determine its own procedure.
7.The parties concerned have the obligation to provide the Commission with such information as it may require and, on request, to permit the Commission to have access to their respective territory and to inspect any facilities, plant, equipment, construction or natural feature relevant for the purpose of its inquiry.
8.The Commission shall adopt its report by a majority vote, unless it is a single-member Commission, and shall submit that report to the parties concerned setting forth its findings and the reasons therefor and such recommendations as it deems appropriate for an equitable solution of the dispute, which the parties concerned shall consider in good faith.
9.The expenses of the Commission shall be borne equally by the parties concerned.
10. When ratifying, accepting, approving or acceding to the present Convention, or at any time thereafter, a party which is not a regional economic integration organization may declare in a written instrument submitted to the depositary that, in respect of any dispute not resolved in accordance with paragraph 2, it recognizes as compulsory ipso facto, and without special agreement in relation to any party accepting the same obligation:
(a) Submission of the dispute to the International Court of Justice; and/or
(b) Arbitration by an arbitral tribunal established and operating, unless the parties to the dispute otherwise agreed, in accordance with the procedure laid down in the annex to the present Convention. A party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with subparagraph (b).
PART VII.
FINAL CLAUSES
Article 34
Signature The present Convention shall be open for signature by all States and by regional economic integration organizations from 21 May 1997 until 20 May 2000 at United

Nations Headquarters in New York.

Article 35

Ratification, acceptance, approval or accession

1.The present Convention is subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. The instruments of ratification, acceptance, approval or accession shall be deposited with the Secretary-General of the United Nations.

2.Any regional economic integration organization which becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to this Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3.In their instruments of ratification, acceptance, approval or accession, the regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Secretary-General of the United Nations of any substantial modification in the extent of their competence.

Article 36

Entry into force

1.The present Convention shall enter into force on the ninetieth day following the date of deposit of the thirty-fifth instrument of ratification, acceptance, approval or accession with the Secretary- General of the United Nations.

2.For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the thirty-fifth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

3.For the purposes of paragraphs 1 and 2, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States.

Article 37

Authentic texts The original of the present Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned Plenipotentiaries, being duly authorized thereto, have signed this Convention.

DONE at New York, this twenty-first day of May one thousand nine hundred and ninety-seven.

ANNEX

ARBITRATION

Article 1

Unless the parties to the dispute otherwise agree, the arbitration pursuant to article 33 of the Convention shall take place in accordance with articles 2 to 14 of the present annex.

Article 2

The claimant party shall notify the respondent party that it is referring a dispute to arbitration pursuant to article 33 of the Convention. The notification shall state the subject matter of arbitration and include, in particular, the articles of the Convention, the interpretation or application of which are at issue. If the parties do not agree on the subject

matter of the dispute, the arbitral tribunal shall determine the subject matter.

Article 3

1.In disputes between two parties, the arbitral tribunal shall consist of three members. Each of the parties to the dispute shall appoint an arbitrator and the two arbitrators so appointed shall designate by common agreement the third arbitrator, who shall be the Chairman of the tribunal. The latter shall not be a national of one of the parties to the dispute or of any riparian State of the watercourse concerned, nor have his or her usual place of residence in the territory of one of these parties or such riparian State, nor
have dealt with the case in any other capacity.

2.In disputes between more than two parties, parties in the same interest shall appoint one arbitrator jointly by agreement.

3.Any vacancy shall be filled in the manner prescribed for the initial appointment.

Article 4

1.If the Chairman of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the President of the International Court of Justice shall, at the request of a party, designate the Chairman within a further two-month period.

2.If one of the parties to the dispute does not appoint an arbitrator within two months of receipt of the request, the other party may inform the President of the International Court of Justice, who shall make the designation within a further two-month period.

Article 5

The arbitral tribunal shall render its decisions in accordance with the provisions of this Convention and international law.

Article 6

Unless the parties to the dispute otherwise agree, the arbitral tribunal shall determine its own rules of procedure.

Article 7

The arbitral tribunal may, at the request of one of the parties, recommend essential interim measures of protection.

Article 8

1.The parties to the dispute shall facilitate the work of the arbitral tribunal and, in particular, using all means at their disposal, shall:

(a) Provide it with all relevant documents, information and facilities; and

(b) Enable it, when necessary, to call witnesses or experts and receive their evidence.

2.The parties and the arbitrators are under an obligation to protect the confidentiality of any information they receive in confidence during the proceedings of the arbitral tribunal.

Article 9

Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the costs of the tribunal shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its costs, and shall furnish a final statement thereof to the parties.

Article 10

Any party that has an interest of a legal nature in the subject matter of the dispute which may be affected by the decision in the case, may intervene in the proceedings with the consent of the tribunal.

Article 11

The tribunal may hear and determine counterclaims arising directly out of the subject matter of the dispute.

Article 12

Decisions both on procedure and substance of the arbitral tribunal shall be taken by a

majority vote of its members.

18

Article 13

If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to make its award. Absence of a party or a failure of a party to defend its case shall not constitute a bar to the proceedings. Before rendering its final decision, the arbitral tribunal must satisfy itself that the claim is well founded in fact and law.

Article 14

1.The tribunal shall render its final decision within five months of the date on which it is fully constituted unless it finds it necessary to extend the time limit for a period which should not exceed five more months.

2.The final decision of the arbitral tribunal shall be confined to the subject matter of the dispute and shall state the reasons on which it is based. It shall contain the names of the members who have participated and the date of the final decision. Any member of the tribunal may attach a separate or dissenting opinion to the final decision.

3.The award shall be binding on the parties to the dispute. It shall be without appeal unless the parties to the dispute have agreed in advance to an appellate procedure.

4.Any controversy which may arise between the parties to the dispute as regards the interpretation or manner of implementation of the final decision may be submitted by either party for decision to the arbitral tribunal which rendered it.

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Annex B Israel-Jordan Peace Treaty, Annex II

ISRAEL-JORDAN PEACE TREATY
ANNEX II
Water and Related Matters

Pursuant to Article 6 of the Treaty, Israel and Jordan agreed on the following Articles on water related matters:

Article I: Allocation

Water from the Yarmouk River

Summer period - 15th May to 15th October of each year. Israel pumps (12) MCM and Jordan gets the rest of the flow.

Winter period - 16th October to 14th May of each year. Israel pumps (13) MCM and Jordan is entitled to the rest of the flow subject to provisions outlined hereinbelow: Jordan concedes to Israel pumping an additional (20) MCM from the Yarmouk in winter in return for Israel conceding to transferring to Jordan during the summer period the quantity specified in paragraphs (2.a) below from the Jordan River.

In order that waste of water will be minimized, Israel and Jordan may use, downstream of point 121/Adassiya Diversion, excess flood water that is not usable and will evidently go to waste unused.

Water from the Jordan River

Summer period - 15th May to 15th October of each year. In return for the additional water that Jordan concedes to Israel in winter in accordance with paragraph (1.b) above, Israel concedes to transfer to Jordan in the summer period (20) MCM from the Jordan River directly upstream from Deganya gates on the river. Jordan shall pay the operation and maintenance cost of such transfer through existing systems (not including capital cost) and shall bear the total cost of any new transmission system. A separate protocol shall regulate this transfer.

Winter period - 16th October to 14th May of each year. Jordan is entitled to store for its use a minimum average of (20) MCM of the floods in the Jordan River south of its confluence with the Yarmouk (as outlined in Article II below). Excess floods that are not usable and that will otherwise be wasted can be utilised for the benefit of the two Parties including pumped storage off the course of the river.

In addition to the above, Israel is entitled to maintain its current uses of the Jordan River waters between its confluence with the Yarmouk and its confluence with Tirat Zvi/Wadi Yabis. Jordan is entitled to an annual quantity equivalent to that of Israel, provided however, that Jordan's use will not harm the quantity or quality of the above Israeli uses. The Joint Water Committee (outlined in Article VII below) will survey existing uses for documentation and prevention of appreciable harm.

Jordan is entitled to an annual quantity of (10) MCM of desalinated water from the desalination of about (20) MCM of saline springs now diverted to the Jordan River. Israel will explore the possibility of financing the operation

and maintenance cost of the supply to Jordan of this desalinated water (not including capital cost). Until the desalination facilities are operational, and upon the entry into force of the Treaty, Israel will supply Jordan (10) MCM of Jordan River water from the same location as in (2.a) above, outside the summer period and during dates Jordan selects, subject to the maximum capacity of transmission.

Additional Water Israel and Jordan shall cooperate in finding sources for the supply to Jordan of an additional quantity of (50) MCM/year of water of drinkable standards. To this end, the Joint Water Committee will develop, within one year from the entry into force of the Treaty, a plan for the supply to Jordan of the abovementioned additional water. This plan will be forwarded to the respective governments for discussion and decision.

Operation and Maintenance

Operation and maintenance of the systems on Israeli territory that supply Jordan with water, and their electricity supply, shall be Israel's responsibility. The operation and maintenance of the new systems that serve only Jordan will be contracted at Jordan's expense to authorities or companies selected by Jordan.

Israel will guarantee easy unhindered access of personnel and equipment to such new systems for operation and maintenance. This subject will be further detailed in the agreements to be signed between Israel and the authorities or companies selected by Jordan.

Article II: Storage

Israel and Jordan shall cooperate to build a diversion/storage dam on the Yarmouk River directly downstream of the point 121/Adassiya Diversion. The purpose is to improve the diversion efficiency into the King Abdullah Canal of the water allocation of the Hashemite Kingdom of Jordan, and possibly for the diversion of Israel's allocation of the river water. Other purposes can be mutually agreed.

Israel and Jordan shall cooperate to build a system of water storage on the Jordan River, along their common boundary, between its confluence with the Yarmouk River and its confluence with Tirat Zvi/ Wadi Yabis, in order to implement the provision of paragraph (2.b) of Article I above. The storage system can also be made to accommodate more floods; Israel may use up to (3) MCM/year of added storage capacity.

Other storage reservoirs can be discussed and agreed upon mutually.

Article III: Water Quality and Protection

Israel and Jordan each undertake to protect, within their own jurisdiction, the shared waters of the Jordan and Yarmouk Rivers, and Arava/Araba groundwater, against any pollution, contamination, harm or unauthorized withdrawals of each other's allocations.

For this purpose, Israel and Jordan will jointly monitor the quality of water along their boundary, by use of jointly established monitoring stations to be operated under the guidance of the Joint Water Committee.

Israel and Jordan will each prohibit the disposal of municipal and industrial wastewater into the course of the Yarmouk or the Jordan Rivers before they are treated to

standards allowing their unrestricted agricultural use. Implementation of this prohibition shall be completed within three years from the entry into force of the Treaty.

The quality of water supplied from one country to the other at any given location shall be equivalent to the quality of the water used from the same location by the supplying country.

Saline springs currently diverted to the Jordan River are earmarked for desalination within four years. Both countries shall cooperate to ensure that the resulting brine will not be disposed of in the Jordan River or in any of its tributaries.

Israel and Jordan will each protect water systems in its own territory, supplying water to the other, against any pollution, contamination, harm or unauthorised withdrawal of each other's allocations.

Article IV: Groundwater in Emek Ha'arava/Wadi Araba

In accordance with the provisions of this Treaty, some wells drilled and used by Israel along with their associated systems fall on the Jordanian side of the borders. These wells and systems are under Jordan's sovereignty. Israel shall retain the use of these wells and systems in the quantity and quality detailed an Appendix to this Annex, that shall be jointly prepared by 31st December, 1994. Neither country shall take, nor cause to be taken, any measure that may appreciably reduce the yields of quality of these wells and systems.

Throughout the period of Israel's use of these wells and systems, replacement of any well that may fail among them shall be licensed by Jordan in accordance with the laws and regulations then in effect. For this purpose, the failed well shall be treated as though it was drilled under license from the competent Jordanian authority at the time of its drilling. Israel shall supply Jordan with the log of each of the wells and the technical information about it to be kept on record. The replacement well shall be connected to the Israeli electricity and water systems.

Israel may increase the abstraction rate from wells and systems in Jordan by up to (10) MCM/year above the yields referred to in paragraph 1 above, subject to a determination by the Joint Water Committee that this undertaking is hydrogeologically feasible and does not harm existing Jordanian uses. Such increase is to be carried out within five years from the entry into force of the Treaty.

Operation and Maintenance

Operation and maintenance of the wells and systems on Jordanian territory that supply Israel with water, and their electricity supply shall be Jordan's responsibility. The operation and maintenance of these wells and systems will be contracted at Israel's expense to authorities or companies selected by Israel.

Jordan will guarantee easy unhindered access of personnel and equipment to such wells and systems for operation and maintenance. This subject will be further detailed in the agreements to be signed between Jordan and the authorities or companies selected by Israel.

Article V: Notification and Agreement

Artificial changes in or of the course of the Jordan and Yarmouk Rivers can only be

made by mutual agreement.

Each country undertakes to notify the other, six months ahead of time, of any intended projects which are likely to change the flow of either of the above rivers along their common boundary, or the quality of such flow. The subject will be discussed in the Joint Water Committee with the aim of preventing harm and mitigating adverse impacts such projects may cause.

Article VI: Co-operation

Israel and Jordan undertake to exchange relevant data on water resources through the Joint Water Committee.

Israel and Jordan shall co-operate in developing plans for purposes of increasing water supplies and improving water use efficiency, within the context of bilateral, regional or international cooperation.

Article VII: Joint Water Committee

For the purpose of the implementation of this Annex, the Parties will establish a Joint Water Committee comprised of three members from each country.

The Joint Water Committee will, with the approval of the respective governments, specify its work procedures, the frequency of its meetings, and the details of its scope of work. The Committee may invite experts and/or advisors as may be required.

The Committee may form, as it deems necessary, a number of specialized sub-committees and assign them technical tasks. In this context, it is agreed that these sub-committees will include a northern sub- committee and a southern sub-committee, for the management on the ground of the mutual water resources in these sectors.

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