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Turning Israeli Technology and Middle Eastern Violence into Water Solutions

Overview

This paper will consist of a historical and political discussion of the nature of the water crisis in the Middle East, particularly related to Israel, and how this impacts intra-Middle Eastern relations. The focus on Israel stems from the fact that this is one of the only states in this region that harbors values of Western democracy and also because of the way Israel initiated projects to subvert the inevitable water shortage problem. After a brief explanation of the water crisis in the region, I will discuss specifically how Israeli technology helped not only their own people but also the citizens of other nations particularly within the Middle East. This topic will lead to how these innovations have impacted the relationships between Israel and its neighbors. The history of the modern Middle East is contentious and delicate; this essay will explore the history of the Israeli-Arab conflict and political hypotheses about how the water crisis may have the potential to either bring these states together for a common cause or tear them down over a war for resources.

Where is the Water?

In a region where much of the land is vast desert, the availability of water is scarce and competition for safe drinking water is fierce. The extent to which water is available is dependent on climate cycles, advancements in water technology, and the efficiency of water management.

"Water use will continue to increase with population and economic growth and will be further influenced by the modernization of agricultural practices, as well as governmental, socioeconomic, and developmental policies" (Jewish Virtual Library, 1998). Use of water is heavily dependent on post-precipitation variables such as temperature, evaporation, runoff, and groundwater retention. Evapotranspiration, or the degree to which plants absorb and transpire water along with evaporation of this water into the atmosphere, also plays a role in water availability. This information is important because, in the Middle East, large quantities of the water are lost to evapotranspiration and runoff, leaving only a small portion of precipitation for groundwater storage. Groundwater is, by far, the greatest sources of water in the region; however, water pumped from the Mediterranean Sea, the Dead Sea, and the Red Sea, via desalination plants, are also valuable geographical assets that provide the Middle East with drinkable water. "Total withdrawals [of groundwater by agriculture] in 1994 were more than what is naturally replenished in an average year" (Jewish Virtual Library, 1994). In one particular case, drought and overuse almost resulted in the destruction of the Sea of Galilee, one of Israel's largest sources of freshwater. "In 2008 … a decade-long drought had scorched the Fertile Crescent, and … the Sea of Galilee, had dropped to within inches of the "black line" at which irreversible salt infiltration would flood the lake and ruin it forever" (Jacobsen, 2016).

As agricultural demands for water deplete the natural groundwater supply and the population in the Middle East continues to rise, intra-regional tensions surrounding the scarcity of water also rises. This tension, created by climate and geographical makeup, is where the heart of the Middle Eastern water crisis exists. In modern times, Israel has managed to single-handedly control this crisis, while its neighbors desperately struggle to manage their water. Israel has used

their competence of water technology to their benefit in the global market economy and for political leverage.

How Israeli Innovation Attacked the Water Crisis

In recent years, coupled with population growth and changes to climate and climate cycles, Israel decided to make water policy a national priority. In the midst of a severe drought, Israel's dedication to addressing this life-threatening environmental issue has resulted in a surplus of water for not only the small state but also for its struggling Arab neighbors. "That remarkable turnaround was accomplished through national campaigns to conserve and reuse Israel's meager water resources, but the biggest impact came from a new wave of desalination plants" (Jacobsen, 2016). Policies were slowly implemented in the middle 00's in an effort to make not only water, but also energy, more efficiently used. In an article by David Hazony, he discusses a book about Israeli water policy, by Seth M Siegel, called Let there Be Water. Hazony made a critical point about the nature of water in the Middle East, "Control of water is the control of life and death. Siegel, himself a successful businessman with no qualms about the importance of markets, compares the role of government regulation of water to the need for traffic lights and speed limits" (Hazony, 2015). It is important that Hazony noted this comparison by Siegel because it accurately expresses the importance of the role of government in the water crisis situation. Contrary to the classical liberal ideology of no government intervention, Siegel and Hazony both endorse this necessary intervention. The success of government regulated water policy is reflected in Israel's astounding statistics when it comes to its ability to recycle water. They top the second most efficient country in the world, Spain, who only recycles 19 percent of their water. To put this into perspective, in Israel, "the national water authority built innovative

water treatment systems that recapture 86 percent of the water that goes down the drain and use it for irrigation" (Jacobsen, 2016). This 67 percent difference in recycling is one of the many results of proper water policy and regulation within the nation to conserve energy and this scarce resource. Another positive result is the lowered equilibrium point for the price of water in not only the Israeli market but also the global market. Firms that are in the business of producing and selling water in Israel became prominent leaders of the global water market and are able to make a hefty profit by selling water to struggling nations at a new and lower cost. Citizens are also able to save every month on the cost of water, a previously scarce and expensive resource. Today, "Israeli households pay about US $30 a month for their water — similar to households in most U.S. cities, and far less than Las Vegas (US$47) or Los Angeles (US$58)" (Jacobsen, 2016). This environmental and economic win-win for firms and citizens is a perfect scenario for public policy approval and motivation to continue with these regulations.

While policies are a large player when plotting to ease the water crisis, the technology that Israeli scientists and engineers have developed greatly impacted the state's ability to harvest water and boost its economy. The first desalination plant in Israel was built in Ashkelon in 2005. Since then, many four were created, including the Hadera, Palmachim, Ashdod, and Sorek plants. The Sorek plant, in particular, is considered to be one of the most defining projects in the world for water desalination. The MIT Technology Review stated,"It is the world's largest modern seawater desalination plant, providing 20 percent of the water consumed by the country's households … Thanks to a series of engineering and materials advances, however, it produces clean water from the sea cheaply and at a scale never before achieved." (Talbot, 2015). In the past, desalination technology was considered to be far too expensive to be considered;

however, the innovations made at Sorek surrounding energy efficiency changed the game. “Water produced by desalination costs just a third of what it did in the 1990s. Sorek can produce a thousand liters of drinking water for 58 cents” (Jacobsen, 2016). This drastic change in price is key for Israeli water-oriented firms and for citizen households, as mentioned earlier.

Desalination technology, however, is only the tip of the iceberg when it comes to water security in Israel. In the 1930’s a Polish man named Simcha Blass began to take interest in water conservation and efficiency. He worked closely on Israeli projects, such as Israel’s National Water Carrier in the 1950’s, and he developed award-winning, advanced, drip-irrigation technology in the 1960’s. By the 1970’s, a company called Netafim worked to create and export these systems all over the country and around the world. Blass’s ideas changed the way that agriculture functioned in the Middle East: “A tiny amount of water in the right place could make a plant grow a lot bigger and faster than a large amount thrown at it by rain or floods or sprinklers” (Talbot, 2015). Researchers in the Netherlands agree. They found in their research that drip irrigation, when used correctly, produces crop yields that climb to over 550% compared to traditional irrigation methods. Farmers have found that coupling these radically efficient irrigation systems with drought-resistant seeds have managed to increase crop yields and lower water usage all at once. Israel is currently investing in genetically modified seeds that enhance plant growth while using a limited amount of water. “Israel today is a seed-breeding giant, competing in world markets, with a specialty in water-efficient crops, including the short-stalked wheat and closely-bunched tomatoes. Israelis are on the ground in Africa, too, helping provide water-efficient seeds to subsistence farmers” (Talbot, 2015).

Jewish technology has drastically altered not only the way the Middle East handles water, but also many other drought-prone regions around the world and this has many implications other than just environmental conservation. The result of the Israeli fight against the water crisis has also created an interesting development between itself and its Arab neighbors. Tensions in the Middle East have historically been dominant; however, water policy and technology may be the path to ease ethnic tensions between the Arab states and Israel.

History of the Arab-Israeli Conflict

In order to conceptualize how resolving the water crisis in the Middle East may improve relations, it is critical to understand how modern history has molded today's conflicts. The tension between the Israelis and Palestinians is largely over land claims and territory. The historical significance of the small strip of land between Egypt and Jordan has been considered to be a sacred place by all the Abrahamic religions since their creation. The land encompassing modern-day Israel and Jordan is traditionally known as the nation of Palestine from 1517 until the end of the first world war. Palestine was a part of the Ottoman Empire for centuries and was controlled by the Turks until it was given to the British in post-war land redistribution. Both nations, the Palestinians and the Jews, thought the Allied Powers would distribute the land to them; however, these perceived beliefs were not necessarily true for either nation. "To the Arab population who lived there, it was their homeland and had been promised to them by the Allies for help in defeating the Turks by the McMahon Agreement – though the British claimed the agreement gave no such promise. The same area of land had also been promised to the Jews (as they had interpreted it) in the Balfour Declaration and after 1920, many Jews migrated to the area and lived with the far more numerous Arabs there" (Trueman, 2015).

As time progressed and nothing was being done about boundaries, tensions became even more strained and violence ran rampant throughout the region for decades. “On November 29, 1947, the United Nations General Assembly adopted Resolution 181 (also known as the Partition Resolution) that would divide Great Britain’s former Palestinian mandate into Jewish and Arab states in May 1948” (Office of the Historian). This day in May is considered to be the Israeli independence day which ignited conflicts all over the region by angry Palestinians. These Palestinians quickly rejected this idea and refused to abide by these international decisions. The city of Jerusalem was at the root of much of the conflict due to its historical and religious significance and even today, the Jews and the Arabs both feel that this holy land belongs to their people. The redrawing of borders resulted in the rebirthing of religious animosities which ultimately lead to the radically violent Arab-Israeli war which occurred from 1948 until 1949. The Jews dominated the war and it ended with the 1949 Armistice Agreements which resulted in the Israelis controlling around 78% of Palestine. Key areas, however, returned to Israel’s neighbors. “Israel gained some territory formerly granted to Palestinian Arabs under the United Nations resolution in 1947. Egypt and Jordan retained control over the Gaza Strip and the West Bank respectively. These armistice lines held until 1967” (Office of the Historian). In 1967, the armistice was broken when Israel performed a preemptive strike on Egypt in an effort to prevent a homeland attack. This sparked the Six-Day War where Syria lost the Golan Heights and Egypt lost the Sinai Peninsula. In 1982, Israel returned the Sinai Peninsula to Egypt in exchange for recognition; however, Israel continues to have control of the Golan Heights today. After various peace treaties, the land was traded for in an attempt to alleviate pressures for years after this.

This history of Middle Eastern conflict and their treaties are essential to addressing the water crisis.

Peace Treaties and Water Solutions

As Middle Eastern nations sought to ease tensions within the region, a number of treaties were signed between Israel and Arab nations that included lists of agreements on various issues. Particularly with the 1994 Jordan agreement, the entire sixth article addresses water-related problems. "According to Article 6.3 of the Treaty 'The parties recognize that their water resources are not sufficient to meet their needs. More water should be supplied for their use through various methods, including projects of regional and international co-operation'" (Shamir 277). This suggested that both nations of Israel and Jordan would work together to share and develop their limited water resources. Since this agreement, relations between Israel and Jordan regarding the environment have improved tremendously, helping to ease some tensions in the region. 75 million cubic meters of water is pumped from Israel to Jordan every year under this plan as long as Jordan continues to allow the Jewish state to have access to their water sources, such as the Jordan and Yarmouk Rivers.

The Treaty of 1994 is especially significant because it sparked cooperation between the two countries and led to future agreements. For example, Jordan and Israel have since agreed to protect the environment and formed initiatives to work together to research and preserve coral reefs and study sheep. While these projects are small in comparison to the water crisis they face, the development of their relationship is critical for a more peaceful Middle East.

Not only has there been these small collaborations between the two states, there has also been the creation of more concrete agreements such as the Oslo II and Memorandum of Understanding.

The Oslo II agreement regarding water, which was created in 1995 as a small part of the larger Oslo Accords that attempted to facilitate Israeli-Palestinian Peace, is more comprehensive than the Treaty from 1994 but is less concrete because it is considered an interim agreement, which is less binding. It emphasized that water and sewage should be dealt with jointly in order to prevent pollution in their water supply, which is a very common issue in the region. Also, "the agreement recognizes the need for both parties to develop additional water, not merely divide the existing sources" (Shamir 283). Continuing with this concept, not only do these countries understand the necessity for more supply, rather than ration their water, they also further defined the lines on the production and construction roles of each country to resolve water shortage and environmental degradation. The Memorandum of Understanding, or MoU, is a more modern agreement for the Middle East that was guided by the United States, which was praised to be a milestone for the region. "According to the agreement, some 200 million cubic meters of water will be pumped annually out of the Red Sea - 80 million will be desalinated at a special facility in Aqaba, Jordan; 30-50 million will be allocated to Israel for use in the Arava and Eilat; 30 million will go to Jordan for their southern region; and, approximately 32 million will be sold to the Palestinian Authority." (Jewish Virtual Library). Abiding by this agreement would bring more peaceful relations especially on the borders and in disputed areas; restore the loss of water in the Dead Sea due to overuse and climate change; and supply both countries with adequate water for their people and agriculture. The Israeli Energy Minister claimed that this was "a dream come true" for Israel and Jordan relations. Prime Minister Benjamin Netanyahu also announced that they have clinched the necessary funds to carry out the agreement and it should be in full effect by 2020.

The Road to Peace

In a time and region that is in political and social upheaval, it is difficult to see any hope for peaceful relations. It is easy to also see how the water crisis in the Middle East could augment this aggression even further. Fortunately, foreign leaders acted quickly to use this problem as a way to foster better relations and to address these environmental issues. It is obvious from my research that the history of the Israeli-Palestinian conflict is complex and deeply personal to the people who live in the region. Their motives come from hundreds of years of religious and cultural history that is difficult to accept when the other side is seen as evil or fundamentally wrong. It is incredibly interesting, however, to see how their relationship in the past few decades has developed to a point where they are able to be partners on a common problem. This new shift inspired more collaboration in other areas such as agriculture and environmental protection. Through treaties and agreements, Jordan has been able to take advantage of Israeli water technology and help to create even more innovative techniques. Israel is also able to take advantage of Jordanian water sources and this has helped to ease some tensions near the border where water is present, such as the Jordan River, the Sea of Galilee, the Red Sea, and the Dead Sea.

I argue that after looking at this research, I am optimistic that relations in the Middle East between Israel and Palestine will progressively improve because of the water policies that are set in place. While this improvement may not be rapid or easy, the introduction and implementation of water policy should bring two cultures together as they work to solve a common problem. By learning about other cultures through work and research, it is difficult for people to hate their partners. In the case of Jordan and Israel, their relationship to produce and distribute water must

have required the cohesiveness of hundreds or thousands of people from both countries. The initial Treaty of 1994 spawned more agreements and projects that further brought the countries together. As they grew closer to address the water crisis, they became more dependent on each other for survival. Jordan and Israel currently face the reality that if one country politically threatens the other, their chances of securing enough water to supply their respective nation is also threatened. Because of this, it is in neither country's interest to start a war over water, considering the advancements that have been made and because of the realization that the production of water is more advantageous than strict rationing and distribution of existent resources. The director of water research at Ben-Gurion University, Eilon Adar, said: "It's in Israel's interest to work with the Palestinians, "because morally it's not healthy to have a thirsty neighbor and politically it's not healthy to have a thirsty neighbor" (Pyper, 2014). The treaties and agreements that are already set in place have been critical for setting an early precedent on how the Middle East will address water: jointly and peacefully. For the sake of securing their own nation, it is imperative that each country collaborates to secure their dependence on each other.

Conclusion

To fully sum up the role of Israel in the water crisis taking place in the Middle East, it is imperative that all aspects of the situation are evaluated, including technology, history, collaboration, the rate of success, and predictions. Israel managed not only to overcome decades of foreign aggression from politically triggered states but also to overcome the inevitable water crisis that struck the region that could have left the desert region entirely inhabitable to all. Because of technological innovation, Israel created a water surplus to aid themselves and their

neighbors. This helped to lessen tensions, particularly around water sources. As Israel and Jordan work together on more projects, I argue that along with a political intercountry dependence because of water, a form of civil society will also form out of these research and development projects that will enhance citizen relationships from both countries and foster a more peaceful Israeli-Palestinian relationship. While the water crisis itself is not positive, the collaborative effort that was created in order to solve it has incredible potential to be the seed that is needed to cultivate a nonviolent and cordial region.

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