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"Virtual Water": a modern means of resolving water distribution disputes between Israel and the Palestinians

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The notion of a water deficit in the Middle East is not a new occurrence. Many generations inhabiting the area have been fighting for control over rivers and lakes in order to gain a constant water supply, as well as an advantageous position over the neighboring countries. After 2000, water, like trees, became a special focus of conflict in the Intifada. The government of Israel and the Palestinian Authority have been involved in many negotiations and confrontations struggling to establish an equal water distribution throughout the region. However, due to the violent history of their relations, the compromise is yet to be set.

The Jordan River is one of the main sources of water shared in the region, and as a result, there is not enough water in the region to fulfill the requirements of the neighboring countries. There are three rivers which provide excellent quality of water in the headwaters of the Jordan River: the Dan River, the Hasbani River, and the Banias River. Water allocation between the Palestinian Authority, Lebanon, Syria, Israel, and Jordan is known to be one of the most difficult regional issues. The failure to develop a unified approach to managing these water resources has encouraged various unilateral developments by each of the mentioned countries.[1]

In the work *Middle East Economic Digest: the Middle East in 1997*, Professor Tony Allan introduces an extremely important unit of water called: "virtual water."

"Virtual water refers to the water required in the production of a good or service. The water is said to be virtual because once the good is grown, the real water used to grow it is no longer actually contained in the good."[2] This concept helps to realize the real cost of producing certain goods and services. Knowing such cost is useful in order to determine how best to distribute the scarce water resources around the world. By importing inexpensive tomatoes and oranges, for example, governments are actually buying cheap, bio-degradable packets of water. Economists calculate that sometimes it is a lot easier and cheaper to import a ton of fruit and vegetables than

[1] AQUASTAT: FAO's Information System on Water and Agriculture. Land and Water Development Division: Jordan. 1997.
[2] Tony Allan. *Middle East Economic Digest: The Middle East in 1997*. (London: Middle East Economic Digest, 1997), 14.

the water it takes to grow it. Most importantly virtual water makes it clear that food produced with the help of irrigation systems is likely to be subsidized food. Acceptance of the idea of virtual water therefore, makes its likely that international pressure will sooner or later be brought to reduce the amount of water wasted through inefficient agriculture.

Allan calls the use of the virtual water the main reason why the "global trading system has enabled the political leaderships of the region to augment their respective inadequate water resources."[3] The global trade in food staples has proved to be a very accessible and effective system. Allan states that "politicians and resource managers find this source far more attractive than stressful, even potentially disastrous, wrangling over local water with hostile neighbors."[4] In light of the ongoing political crisis, it is easy to understand Allan's argument. Therefore, he claims, the strategic imperative of providing food for citizens may be met through access to politically stress-free virtual water from abroad, which would reduce the amount of friction between the two states. The access to virtual water is achieved by developing economies strong enough to provide the purchasing power to trade in international markets. Meeting future virtual water needs at affordable prices is an extremely important economic issue for Middle Eastern governments, especially Israel and the Palestinian Authority where water fuels dangerous and bloody tensions.

In the book, *Israelis and Palestinians: Why Do They Fight? Can They Stop?*, Bernard Wasserstein mentions that water has played a prominent role in the history of the Arab-Israeli conflict from the very beginning. The author emphasizes the fact that during and after the Paris Peace Conference in 1919, the Israelis "pressed hard to ensure that the sources of the Jordan fell within the British, rather than French, mandated area."[5] Israelis strongly supported a concession to utilize the Jordan waters for the production of hydro-electricity. When activated, the concession proved to be a major contribution to the electrification of Israel. Wasserstein also mentions that by 1946, the Water Commissioner was "in despair over continued over-pumping in the Haifa area."[6]

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[3] Allan,16.
[4] Ibid.
[5] Bernard Wasserstein. *Israelis and Palestinians: Why Do They Fight? Can They Stop?* (New Haven: Yale, 2003.)
[6] Wasserstein, 50.

According to the hydrologists, the Middle East ran out of water in the 1970s and Israeli-Palestinian territory ran out in the 1950s.[7] By "running out" they mean lacking sufficient water to meet total needs: industrial, municipal, household, and, most crucially, water for food production. However, Professor Allan argues that the area does not necessarily face a water catastrophe. He claims that "water resources do not determine socio-economic development: socio-economic development determines water management options."[8]

Wasserstein provides the Israeli case as an example of a relatively successful implementation of water management techniques that increased the development of a diverse modern industrial economy.[9] The author believes Israel offers a model of effective water usage. The country where the overwhelming percentage of water is consumed by agriculture chose to abolish the private ownership of water resources by the Water Law of 1959 and give the Water Commissioner the power of decision-making over all water issues in the country.[10] Regulations issued later set out the following order of priorities in "rationing areas": domestic usage, industrial, agricultural, and other.[11] As a result, the Israel's total water usage declined significantly between 1998 and 2001.[12] On one hand the average allocation of water to agriculture per unit of land area was reduced by more than a third, between 1975 and 2001, while agricultural output nevertheless increased substantially.[13] On the other, Allan mentions that Israel could make up any water-related shortfall in food needs by importing Virtual Water, however, this principle of not yet used widely.[14]

No doubt conflict over water has grown more acute in recent years and has become a significant element in the Israeli-Palestinian dispute. Alvin Rouyer, in his work *Structural Flows in the Middle East Peace Process: Historical Contexts*, calls the inequitable access to water, for agricultural and industrial purposes and basic human consumption "one of the most transparent forms of discrimination faced by Palestinians."[15] According to various estimates offered in the book,

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[7] Ibid., 88.
[8] Allan, 18.
[9] Wasserstein, 89.
[10] Wasserstein 89.
[11] Ibid.
[12] Ibid., 90.
[13] Ibid.
[14] Allan 78.
[15] Rouyer, Alvin R. J.W Wright, Jr., ed. *Structural Flows in the Middle East Peace Process: HistoricalContexts.* (New York: Palgrave, 2002), 112.

Israelis consume around three to four times more water per capita than Palestinians. At the same time, Wasserstein points out that "the Israeli occupation administration after 1967 limited Palestinian access to the aquifer by restricting permission for new wells."[16]

Moreover, many Palestinian villages rely entirely on wells or on the collection of rainfall in cisterns. As a result, by the late 1990s West Bank Palestinians had one of the lowest water consumption rates in the world: 20 to 30 cubic meters per person per year.[17]

While competition for water has been heightened in the short term, Allan foresees that pressures are likely to force the two sides to cooperate in the future. He claims: "No wall can be erected between the water resources on which both Israelis and Palestinians depend."[18] Considering their high level of hydrological interdependence, Israel and Palestine cannot succeed in dealing with the water issue separately, if they want to avoid still more conflict in the future.

The economic value of water is obviously not new in the Middle East. For years local governments have been in fact trading in "virtual water", without using this terminology. Gershon Baskin, co-director of the Israel/Palestine Center for Research and Information, and Nader el Khatib, director of the Bethlehem-based Water Environment Development Organization, are well known activists working and writing together inspired by the idea of providing the public with better understanding of water issues in the region and suggesting new strategies which are further examined by professionals in the field. In their article "If Common Sense Prevails," the authors mention that, "Both Israel and the Palestinian Authority currently allocate about 80 percent of their respective water supplies to agriculture."[19] In Israel, farmers make up about three percent of the labor force and contribute three percent of the GDP.[20] In Gaza and the West Bank, a third of the workers depend upon agriculture, which accounts for about a third of the GDP. Baskin and el Khatib conclude, "so it is no surprise to find that Israel buys the entire surplus from farms in the West Bank and Gaza, providing for one-twelfth of the country's

[16] Wasserstein 92.
[17] Ibid.
[18] Allan 93.
[19] Gershon Baskin, Nader el Khatib. "If common sense prevails: Despite Sealed Borders and Gunfire, Israeli and Palestinian Experts Continue to Meet on the Sidelines in an Attempt to Hammer out a Way of Sharing Their Blue Gold." *The UNESCO Courier* (Oct. 2001), 22.
[20] Baskin, 22.

fresh fruit and vegetable needs."[21] This way, Palestinians overexploit their water resources, but do not take the full advantage of it. More importantly, both the Israelis and the Palestinians would do better, and at the same time dramatically ease the water crisis by importing more of their food from outside the region.

Allan urges that "Middle East importers should act together as the pivotal force in the global grain trade, an ability made possible by their large-scale purchases since the region is, and will remain for the foreseeable future, the major grain importing region of the world."[22] However, addressing the global virtual water trade has not gained a place on the water policy agenda in the region.[23] The more familiar story of French farmers and Japanese rice producers is instructive. It is possible that it will not be politically easy for governments in the region to act on the implication of virtual water. Since water is known to be central to a traditional agricultural way of life, the politics of water management in Israel and Palestine are also driven by very deeply held belief systems and hold a crucial strategic significance.[24] This fact makes the process of negotiating between the countries even more difficult and slows down any possible improvements.

The recent World Water Council examination of virtual water at the global level, stated that such trade "has a geo-political implication: it induces dependencies between countries."[25] Therefore, it can be regarded either as a stimulant for co-operation and peace or a reason for potential conflict. The World Water Council lists two main objectives of this program. The first of which is to provide governments with information and tools to enable them to implement virtual water trade in their economy as an effective way to promote water saving.[26] The second objective is to develop mechanisms for countries with limited water resources to generate funds to get access to foreign exchange and international markets and, therefore, increase the amount of imported goods, mainly food.[27]

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[21] Ibid.
[22] Allan, 16.
[23] Ibid., 15.
[24] Ibid.
[25] "Virtual Water: In Brief." World Water Council, Dec 2005.
[26] World Water Council.
[27] Ibid.

Opinions about expanding the trade of virtual water in the Middle East are divided. There are those who strongly oppose this project explaining their opposition by the strong characteristics that exist in the region and might turn into unmanageable obstacles. UNESCO journalist, Amy Otchet, in his article "An Economic Mirage?" states that "across the Middle East, government officials refuse to discuss the issue of virtual water publicly."[28] Publicly-available statistics, however, clearly indicate the rise of the region's wheat imports, and there is no reason to believe that this rise will stop any time soon. Otchet believes that the silence reflects the political climate in the region. The journalist cites the interview with Mamdouh Shahin, a Netherlands-based Egyptian professor of civil engineering widely respected in the Middle East for his hydrological assessments of the region. Shahin says, "There are a lot of negotiations going on right now on various security issues, including water-sharing agreements. Any information linked to water scarcity is sensitive."[29] According to Fadel M. Naqib's study of the economic aspects of the collapse of the Oslo agreement, 25% of the Palestinian population are involved in agriculture, while in Israel it is actually a mere 2%.[30] Virtual water has a bad image in the Middle East where farmers obviously oppose increased food imports. The question rises: Does a water crisis mean that countries should abandon their agricultural sector and leave farmers jobless?

During the interview, Shahin wisely mentions, "Food imports are even more strategically sensitive than energy imports. You can live without oil, but not without food."[31] He notes that one of the main dangers of virtual water is that "importing nations would be vulnerable in the event that grain producing countries cut subsidies to their farmers, potentially leading to significantly higher prices."[32] Interestingly, Shahin also points out strong religious objections to charging for water: "According to the Koran, if you find someone who needs water but is unable to reward or compensate you in any way, you must give them some for the sake of God's blessing and mercy."[33] Rivers are considered a "gift of God" and since the people cannot compensate the government for the price of using the water, there is no charge.

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[28] Amy Otchet. "An Economic Mirage?" The Unesco Courier, Feb 1999.
[29] Otchet.
[30] Fadel M. Naqib. "Economic Aspects of the Palestinian-Israeli Conflict: The Collapse of the Oslo." Oct 22. As noted, Baskin gives the figure of 3%.
[31] Otchet.
[32] Ibid.
[33] Ibid.

Another Otchet interviewee, Jad Isaac, director-general of the Applied Research Institute of Jerusalem (a non-profit organization for sustainable development in Palestinian territories) attacks the concept of virtual water from an economic perspective: "If we are going to talk about virtual imports," he says, "we should also consider our virtual exports (of fruits and vegetables) to Europe and the United States."[34] So the question that arises is which types of agriculture should be given priority: wheat for food security, or high value cash crops like vegetables and fruits?

Isaac criticizes Israel, which receives tremendous financial and other forms of assistance from the United States and other Western governments, for failing to adopt an economically efficient agricultural policy."[35] "Many think there has been a change in Israeli policy, but the government is still subsidizing water," says Isaac.[36]

In the article Isaac suggests that "With a gross national product (GNP) of about $17,000 per capita, Israel can afford to orient its economy towards high-technology sectors and depend less on farming. In contrast, Palestinian per capita GNP is about $1,000 and dependent on agriculture."[37] According to Isaac, this is why Palestinians should continue to develop farming in the short term, while gradually creating an industrial base which would help to support the government if it chooses to participate in virtual water trade.[38]

In order to come up with an efficient recommendation for improving the water management in the region, one ought to follow fundamental working criteria mentioned by the National Research Council Staff. In the work *Water for the Future: The West Bank and Gaza Strip, Israel, and Jordan,* the Council suggests that the view should be regional, the demands and needs of both present and future generations must be taken into account, and all options should be considered for balancing water supplies and demand.[39] Furthermore, the maintenance of ecosystem services should be viewed as essential for achieving sustainability of water resources and the close

[34] Ibid.
[35] Otchet.
[36] Ibid.
[37] Ibid.
[38] Ibid.
[39] National Research Council Staff. *Water for the Future: The West Bank and Gaza Strip, Israel, and Jordan.(* Washington, DC: National Academies Press, 1998), 17.

relationships of water quality and quantity should be clearly recognized.[40] It is not clear if virtual water project can fulfill these requirements and bring about successful changes to a region where conflict is not considered an uninvited guest, but a permanent resident.

Peaceful coexistence between Israel and Palestine depends to a great degree on the water struggle because its unfair distribution has led to violence and hostility and importantly contributes to an understandable Palestinian sense of grievance. Responsible national and international agencies ought to decide on the approach which will be capable of satisfying basic needs of the neighboring countries in a fair manner. Is virtual water capable of that? This is the question that, if answered holistically, may lead to a progressive solution to the water crisis existing in Israel and Palestine.

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[40] National Research Council Staff, 17.

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