Water Security in the Middle East: The Hydro-Politics of Global Solutions

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Summary

Water scarcity is potentially a very stressful issue in the realm of high politics. The Middle East region's water deficit, which has been worsening since 1970, has not become a political issue because it has been possible to de-emphasize the problem. This de-emphasis of the rapidly worsening water predicament has been possible because being short of water in the second half of the twentieth century was not a serious issue for adaptive political economies. Such economies could easily access the surplus "virtual water" in the global hydrological system via trade (Allan 1996a, 76–82). Being short of water is not a serious source of insecurity for a political-economic actor. However, the situation in Iraq since 1991 has reinforced the position of those disposed to assume that dependence on international trade is unsafe if asymmetric international power relations become sources of conflict. Being short of water is the least of Iraq's international relations problems. Being short of the social adaptive capacity to ameliorate a water shortage using economic instruments is, however, both a very predictable and a very serious position of insecurity.

Introduction

The main purpose of this analysis is to conceptualize water security as perceived by the peoples of the Middle East and North Africa. Water secures the fabric of society. Water is, in other words, essential for life, for livelihoods that produce food and for all other livelihoods as well. Water also secures economies, serving as an input to diverse productive and service activities, which have widely different water requirements. Some water must also remain in the environment to provide environmental services. Environmental security is, therefore, related to the extent to which a region's water resources are being managed with awareness of, and consideration for, the environmental services that water provides.

As it is fundamental to the social, economic, and environmental sustainability of every community and every political economy, water is a strategic resource. In political economies where water sustainability is narrowly defined as water self-sufficiency, water will be identified as a particularly strategic resource. In such economies, when news of a water deficit is widely known, the issue of water insecurity can become an issue of high politics. The politics of water insecurity in the Middle East have, in practice, been very successfully defused by the parties' defaulting into a tightly structured discourse, which runs, "All we need is a little more fresh water—then we shall manage it more carefully, and everything will be all right."

The second purpose of this analysis will be to show how this shared

discourse—shared at least among the Arab states—complicates any analysis of regional water security and associated issues of international relations. The region is very "water insecure," but no politician will depart from the prescribed discourse, which asserts that the region's political economies are *not* water insecure. The third purpose will be to explain how this (very provable) level of water insecurity can successfully be so de-emphasized in national and regional politics. The reason is that Middle Eastern governments can ameliorate their water deficits by importing "virtual water" (Allan 1996a, 76–82). Virtual water is the water embedded in water intensive commodities such as grain. It requires 1000 cubic meters of water to produce one cubic meter of wheat. By importing a cubic meter of wheat, a water-poor economy avoids all the economic costs and political stress of mobilizing 1000 cubic meters of water. The Middle East imported about 25 per cent of its water requirements as virtual water in the year 2000. Virtual water will provide 50 per cent of the region's doubled water requirements in 2050.

A fourth purpose will be to identify the recognized and unrecognized linkages that bind water to national politics and international relations. Water is integral to food security and environmental security, and food production and environmental services are the biggest users of water. They are also in mutual competition, especially in economies where food needs accelerate in response to rising populations (Dyson 1994). The impacts of such competition can be felt within a political economy where environmental services are impaired by the withdrawal of water from the environment for food production. Or they can impact a neighboring riparian region, where additional irrigation reduces the flow

of water across a border, affecting the environmental services and economic security of a neighboring state. Relevant international relations theory and international customary water law will be briefly drawn upon in analyzing such cases.

A fifth purpose will be to demonstrate the consequences of de-emphasizing the above linkages for the economic efficiency and environmental consideration of water allocation and management. It will be shown that virtual water provides an economically invisible and politically silent solution to what would otherwise be very painful high political issues of water insecurity. The remedy, however, has an important unintended negative consequence: the de-emphasis of the actual water predicament of the region through the accessibility of virtual water slows the adoption of sound economic and environmental approaches to the use and allocation of water. Virtual water brings about the adoption of second-best solutions in the judgment of professional economists and environmentalists.

Finally, there will be a brief review of the various phases of use and management of the common-pool water resources of the Middle East region. The colonial regime (1880–1950), the Cold War regime (1950–1990), and the post-Cold War regime will be discussed, and the current developments in river basin relations in the Nile and the Jordan will be reviewed.

Some basic water resource statistics: General and region-specific

Water is available for use by communities and economies as fresh water and soil water. Fresh water occurs on the surface in the form of river flows and in natural and constructed surface reservoirs. Fresh water also occurs in groundwater aquifers. In non-arid economies, water is additionally available in soil profiles supporting natural vegetation and crops. The majority of the water used by the human population world-wide is used for food production, and comes from soil water and fresh water. In the Middle East, soil water is even scarcer than fresh water. The withdrawal of fresh water and soil water from the natural environment for agriculture can have serious impacts on the environmental services provided by water.

The peoples of the Middle East have similar annual per capita water requirements to those in other regions. They need water for drinking, for domestic use, and for the production of the food they consume. Water is also needed as an input to industry and services and for municipal needs. The Middle East is special only in that it endures high temperatures, which means that water stored at the surface will be subject to high levels of evaporation. Where communities in the Middle East choose to have high levels of green space, then the municipal use of water will compete seriously with all the other uses. Water for drinking, for domestic use, for industry and services is “small water.” Big water” is water used to produce food and for maintaining green spaces, such as parks.

"Small water" accounts for about ten per cent of per capita consumption, while "big water" constitutes about 90 per cent.

An individual needs only one cubic meter per year of high quality water for drinking. In industrialized and Middle Eastern economies, an individual uses about 100 cubic meters per year of fresh water for domestic needs. The amount of water required for food production is about ten times higher—about 1000 cubic meters per year per person. Water for other livelihoods places only minor demands on freshwater resources. Table 1 provides a comparison of Middle Eastern diets with other regions. The average figures obscure the range of consumption within regions. The Persian Gulf countries, for example, have levels of meat consumption, comparable with those of North America.

Table 1: Total water required to produce regional diets—the Middle East and other regions compared—late 1980s

Region	Water to produce average diet—liters/person/day	Water to produce average diet—m^3/person/year	Total calories per day	Per cent of calories from meat
Africa, South of Sahara	1760	640	2191	10
South and East Asia	2110	770	2485	12
Centrally planned Asia	2530	920	2541	15
Latin America	2810	1030	2555	19
Middle East & N Africa	**2940**	**1070**	**2819**	**13**
Pacific/Oceania	3310	1210	2691	24
Eastern Europe	3910	1430	3345	28
Former USSR	4300	1570	3253	30
Western Europe	4960	1710	3350	36
North America	5020	1830	3133	35

Source: Cited by Serageldin (2001) based on OECD studies.

Note that the water use data includes both rainfall and irrigation water. The data are based on estimated variations in regional irrigation efficiencies. Data on diets from FAO (1998) and on water requirements per calorie on studies by Gleick (2000).

The population of the Middle East and North Africa was about 350 million in the year 2000. According to the figures in the previous paragraph, this population would require about 350 billion cubic meters of water per year. There are only about 200 billion cubic meters of renewable fresh water in the rivers and aquifers of the region (Allan 1994). Some parts of the region's resources are being over-used—for example, the aquifers of the coastal tracts of North Africa, the Eastern Mediterranean, and the Gulf. A few flows are not yet fully utilized, such as the Tigris system. The region also has a very poorly understood variable seasonal source of water in the region's winter soil profiles. The deficit of about 150 billion cubic meters per year of fresh water is partly made up by 50 billion cubic meters of imported virtual water embedded in water intensive commodities such as grain. The remaining 100 billion cubic meters is available in the tracts with rainfall above 250 mm per year and through other trade.

The population of the region is rising rapidly, although the rate of increase is falling. It is estimated that the region's population will level off at about 600 million sometime after the year 2050. These 600 million people will require about 600 billion

cubic meters of water per year. The finite renewable freshwater resources of the region will remain at 200 billion cubic meters per year. Additional water will become available with the re-use of municipal, including industrial, water. Such "new" water is restricted in use to irrigation of non-food crops. Unfortunately, municipal water is part of "small water," which accounts for only about ten per cent of the total water budget. If half of all municipal and industrial water were to be re-used, it would only increase the volume of water available annually by about five per cent, or 10 billion cubic meters.

In addition, new water can be manufactured for municipal use in desalination plants. Costs have fallen in the past five years, and such water can now be produced for about 50 U.S. cents per cubic meter. This means that populations that live close to the sea will easily be able to obtain their municipal and drinking water. Between 60 and 70 per cent of the population of the Middle East and North Africa live within a few kilometers of the sea or a major river. The region presently manufactures about 2.5 billion cubic meters per year of desalinated water. By 2050 it is likely that the figure will be ten billion cubic meters per year, but it could be much more. These numbers are important in that ten billion cubic meters of re-used water plus ten billion cubic meters of desalinated water constitute a significant proportion of the 60 billion cubic meters of municipal water that will be needed in the mid-21st century. This water is, however, the "small water." This new water is a negligible proportion of the water needed to produce the future annual food needs of the region, only about ten per cent of the total of about 600 billion cubic meters.

The future supply/demand equation for water in the Middle East is one of serious non-self-sufficiency. If non-self-sufficiency equates with water insecurity, then the region has been in a worsening situation since 1970. 25 per cent of the "big water," which provides the food needs of the region, was by 2000 coming from outside the region. By the year 2050, over 60 per cent of a doubled demand (due to population increases) for "big water" will come from outside the region. Water security cannot be achieved with regional water. Water security will depend on successful participation in the political economy of the international trade in food.

The political economy of water in the Middle East is subordinate to the political economy of the global trade in staple foods. The political economy of the global trade in staple foods is in turn subordinate to global hydrology. The significance of the last condition is that regions with plentiful water that produce staple grains have a comparative advantage in the production of such crops. Trade in virtual water is an extreme example of the economists' concept of comparative advantage.

There are additional advantages for water deficit/virtual water importing economies than the mere benefits of comparative advantage. Food imports simultaneously solve both the water and the food deficit problems. At the same time, the importers of virtual water also benefit from a major economic aberration. Global trade in staple grains, like most agricultural activities, does not observe the principles of classical

economics. The major exporters—the U.S. and the EU—put much of their grain exports on the world market at half their production cost. The United States and the EU economies have long-standing production and export subsidies, and these subsidies have proved to be too difficult to dismantle. A short-lived reduction in subsidies with the inauguration of the World Trade Organization in 1995 has been reversed (ABARE 1995 and 2001).

The Middle East entered its era of serious water insecurity in the 1970s at a point in history when world staple grain prices had been falling for about 200 years (Dyson 1999). A combination of technological progress, the production and export subsidies in the Northern economies referred to above, and the exclusion of the externalities of environmental degradation from grain prices all drove prices down. In 1898, it was possible to import wheat into Jordan from North America at prices lower than the costs of local production (Lancaster, et al 1999). The peoples and governments of the Middle East region have been very fortunate indeed over the past century in finding their local water predicament to be ever more remedied by perverse global commodity pricing the worse their local water insecurity became. Middle Eastern economies have a very long acquaintance with the importation of cheap food commodities. Price signals have, however, obscured rather than highlighted commodity values, especially in the past four decades.

Conceptualizing water security—security and perceived security—sustainability as a discursive outcome

The analysis so far has demonstrated that the underlying water supply and water demand statistics show the Middle East region to be seriously water insecure. Water self-sufficiency is unattainable. Yet economically and environmentally rational outsiders do not find such insecurity special or significant. Partial resource insecurity is the lot of all political economies. Outsiders also observe that resource poverty does not determine that a political economy will be economically weak. On the contrary, they point out that a diverse and strong economy can overcome resource deficiencies. These ideas are of universal relevance (Karshenas 1994, Ohlsson 1999, Turton and Ohlsson 1999), but are especially relevant to the Middle East (Karshenas and Allan 1996a, 121; Allan 2001, 146–147).

Middle Eastern insiders cannot be persuaded that economic diversity and strength are more important than resource endowment. A serious water deficit cannot simply be conceded, as politicians would pay a very high political price if they were to reveal that the deficit existed. Water users and politicians are locked in the sanctioned regional discourse.

The resulting concept of water security that prevails across the region is the false but unchallenged idea that the amount of available fresh water is sufficient. The evidence

usually given to support the idea that there is sufficient fresh water is the general absence of municipal water shortages. The outsider knows that the achievement of municipal water security is not a difficult challenge, as water for municipal purposes is "small water," constituting only ten per cent of the total needed for an economy as a whole. The 100 cubic meters per year of water needed per person is available almost everywhere in the Middle East, or it can easily be desalinated. The region for which this generalization does not apply is the upland spine, on which are located major cities such as Damascus, Syria (4 million in 2000), Amman, Jordan (1.5 million in 2000), Sana'a, Yemen (0.8 millions in 2000), and Ta'iz, Yemen (0.4 millions in 2000).

It is not surprising that even the semi-arid and arid Middle East has sufficient freshwater resources, augmented by manufactured water, to meet municipal water needs. Middle Eastern governments can then easily ameliorate their "big water" deficits by importing "virtual water." The Middle East imported about 25 per cent of its water requirements as virtual water in 2000; virtual water will provide 50 per cent of its doubled water requirements in 2050. Politicians facing the hazards of the high politics of national water scarcity happily look outside the watersheds to which they have access to the "problem-shed" of global trade, where water intensive commodities such as grain can be easily purchased.

Linked security–water as a subordinate issue in riparian relations

The Middle East region is a security complex as defined by Buzan and Waever (1998). The Middle East and North Africa have three security sub-complexes: the Gulf, the Levant, and the Maghreb (Buzan and Waever 2003). A regional security complex is defined as the integration of regional relations resulting from the *rapport de forces* particular to the region, which is determined by asymmetries of power, patterns of resource endowment, the dynamic coalitions within the region, and the diverse patterns of trade and global patronage that affect the political economies of the region. The extent to which a regional or a multi-riparian water regime is characterized by realist or constructivist relations will be shown in the concluding section to be determined by the changing circumstances of pre-colonial, colonial (1880–1950), Cold War (1950–1990), and post-Cold-War (1990–?) periods (Waterbury 2002, 57 ff).

The Persian Gulf security sub-complex is dominated by its endowment of hydro-carbon resources. The Gulf is the major global source of traded oil and natural gas. These resources have been of particular importance during the past half-century, and will remain of great significance for an additional half-century or so because they provide extremely flexible and transportable forms of energy that are in high global demand. The Gulf is extremely short of water, but water scarcity does not play a major role in the politics of the sub-complex. There are no shared surface flows of any significance. The only competitive development of a shared groundwater resource is on the Disi Aquifer, which underlies the Saudi Arabia–Jordan border. This competition for water is significant to

Jordan, as it has a serious water resource deficit, but water is not the defining factor in Saudi-Jordanian relations. Trade, mutual interests in internal security, and concern over the predicament of the Palestinian Authority and the status of Jerusalem are all more salient than water in this relationship.

The Gulf political economies have no political or economic leverage over the major water resources of the Middle East region—the Nile and the Tigris-Euphrates systems. No investments have been made by the Gulf economies in the water resources of the Tigris-Euphrates riparian regions. On the Nile, limited and unsustained investments were made in the second half of the 1970s in a pan-Arab project to develop the soil and water resources of the Sudan after the 1973 oil crisis. This international shock had revealed that the United States could rattle the sabre of staple foods if the Gulf economies chose to deploy the oil weapon as they had done in 1973. The Arab food self-sufficiency project of 1974 and the five years that followed aimed to combine Gulf capital with Sudan's soil and water resources and Egyptian human and technical capacity to diminish the regions reliance on food imports. The project was a painful failure that reinforced awareness in the governing and professional classes in the region of the dangers of the high politics of regional water insecurity and vulnerable food supplies. Since 1997, Egypt has taken a more focused approach in lobbying to attract Gulf investment in the ambitious southern irrigation scheme known as the New Valley Project. Sheikh Zayed of Abu Dhabi has invested in the canal and pumping infrastructure of the project, and some Saudi financiers are showing interest in the specialized capital-intensive irrigation elements of the project.

While the major water sources of the Middle East are geographically removed from the Gulf sub-complex, water is at the geographic heart of the Levant security sub-complex. Water is an important issue in the international relations of the states in the Jordan riparian. Water is seen as one of a number of linked negotiable issues in this sub-complex (Allan 1996a), but is unambiguously central to the geography of the four states—Israel, Jordan, Lebanon, Syria—and to the Palestinian Authority (Allan 2001, 73–86). There is a history of conflict over water in the Jordan Basin dating back to the creation of the State of Israel. The colonial British administration had calculated the water resource potential of pre-partition Palestine (Ionides 1953, 153–164). Zionist interests produced their own report on the water resource potential of the region to the west of the Jordan River (Lowdermilk 1944). After partition, Israel rapidly expanded the rate of withdrawal of groundwater from the Coastal Aquifer and from the West Bank Aquifer, which emerges in major springs in the coastal plain of Israel. Israeli water use—including that for Arab Israelis—increased from about 200 million cubic meters per year in 1948 to about 1.4 billion cubic meters per year a decade later (Allan 2001, 146). Israel was a typical modernizing and industrializing state committed to its hydraulic mission. A characteristic of the hydraulic mission during industrial modernity (approximately from the mid-nineteenth century to the late 1970s—Giddens 1990, Beck 1992) was the pervasive confidence of political leaders and water professionals that they could successfully control nature, and especially water resources (Swyngedouw 1999; Reisner 1984; Worster 1985; Allan 2001, 28–30).

Increasing populations with expectations of improved water services drove the demand for water among all the states in the Jordan Basin. For example, the population to the west of the Jordan increased from under two million in 1945 to ten million by 2000. With renewable water resources estimated at only 1.8 billion cubic meters per year, augmented by a further 200 million cubic meters of re-used municipal water annually by 1990, there was only sufficient water for about two million users, not ten. The area to the west of the Jordan has been water deficient since the mid-1950s. By 2000, the region needed five times as much water than was actually available for secure self-sufficiency.

Water has been and remains a central issue in the Levant security sub-complex. It was one of three issues on the table in the 1992–93 negotiations between Jordan and Israel, along with peace and territory/borders. It is one of five major unresolved and contentious issues in the relations of Israel and Palestine. When water is linked with other issues, water always assumes the lowest priority in negotiations. In such circumstances, the weaker party always gets a poor deal over water. Jordan prized the security associated with peace more highly than the security associated with water in 1992–93. The symbolic value that Palestinians attribute to Jerusalem, borders, Israeli settlements, and refugees far exceed the value given to water security. This experience suggests that the weaker negotiating party should try to avoid linking water with other high-level political issues. Water should wherever possible be de-linked and negotiated separately.

Water negotiations should ideally embrace all the nations in a river basin as well as all the linked issues that exist in a basin such as that of the Jordan. In practice, multi-issue negotiations involving all the relevant riparian states generate intractable negotiations. Where there are asymmetric power relations, the hegemon will seek to limit the issues under consideration and/or the number of participants according to their interests. Israel, the mid-stream hegemon, has insisted on successive bi-lateral negotiations with Jordan and Palestine, Syrian and Lebanon. It has also insisted on including water along with the other four issues, as Israel's security priorities are best addressed in this mode.

In the Nile Basin, both current and past circumstances are different. The incentive to include all riparian states in any discussion of the management of water in the basin has favored the interests of the downstream hegemon – Egypt. Getting nine (after 1993, ten) riparian states to reach agreement was impossible. Egypt wanted there to be no agreements. Any agreements to build structures and initiate water consumptive uses of the Nile, which would reduce river flows, would be bad for Egypt. Egypt therefore always insisted that unanimity among the relevant states should be the basis of any investment. Only during the 1990s did a basin-wide cooperative approach evolve. Cooperative progress even in this recent phase has proved to be very slow, and the outcome has been very much to the advantage of Egypt, which benefits from the poor developmental capacity of the upstream states.

Water security in the Tigris-Euphrates Basin is perceived differently (Kolars 1990, Kolars & Mitchell 1991). In the Jordan Basin, the hegemon has been Israel—a mid-stream/downstream riparian state. In the Nile, the hegemon is Egypt, also a downstream state. In the Tigris-Euphrates, the most influential riparian state is Turkey, which is upstream. Turkey has unilaterally reduced the flow of the Euphrates to almost half of its natural level below the border between Turkey and Syria. The water security of both Syria and Iraq has been impaired by the investment in water control structures by Turkey in the upper basins since 1970. Turkey has attempted (without success) to develop a constructivist regime, identifying mutual interests in trading the energy, water, and agricultural resources with which the states in the sub-region are variously endowed (Kibaroglu 2002). Very limited progress has been made in achieving bi-lateral agreements, much less a more comprehensive constructivist regime (Wolf 2000).

Linking water with other issues of significance in bi-lateral and multi-lateral relations can be vital for the negotiating parties. There has been a tendency for the river basin hegemon in these sub-regions to link or de-link water with other issues in order to advance their own interests. Power asymmetries affect negotiations themselves, but are just as important at the preliminary stages, such as determining whether water should be negotiated separately or at the same time as more salient issues.

De-linked security–the distorting standard discourse of de-linking water, food, and

environmental security

National and international political processes tend to link water with other issues, and thereby complicate riparian relations and multi-lateral and multi-issue negotiations. Political processes can just as readily obscure and de-link awareness of tightly bound systems and of the inseparability of elements in complex economic processes. This section will emphasize the consequences of de-emphasizing the water, food, and trade nexus for the economic efficiency and environmental consideration of water allocation and management.

While competing riparian states seem to assume that they negotiate for a share of water to achieve water security in a closed hydrological system, they actually operate in a much larger and more diverse closed global system. The naturally occurring water in a river basin or aquifer is closed in the sense that there is an annually renewable volume of water on which competing riparian states can draw. The naturally occurring water in the global system, however, can be accessed via trade in water intensive commodities.

The capacity of virtual water imports to mask the serious water insecurity of the Middle East has been demonstrated (Allan 2002); the food and trade elements of the process are de-emphasized and denied. Goleman (1996) has usefully observed that "simple truths and vital lies" sustain social relations. The simple constructed truth concerning Middle East water security is that "the Middle East has not run out of water"— that is the standard discourse discussed above. The vital lie is that virtual water

does not exist.

The adoption of the simple truth and the vital lie has important unintended negative consequences. The obscuring of the predicament of the region through the availability of virtual water slows the adoption of sound economic and environmental approaches to the use and allocation of water.

Reduced allocative efficiency in the management of water and reduced water services through poor environmental management impair the water security of a state or region. Water-poor economies can double their productive [technical] efficiency of water management and increase allocative [economic] efficiency hundreds-fold if motivated to do so (Allan 2001, 130). The impact of the politically invisible international virtual water solution to local water insecurity has been to perpetuate the permitted discourse—that no water shortage exists. As a result, the motivation and urgency to improve water use efficiency is impaired, and the continuation of past practice is the norm. Inevitably there are exceptions, but policy reform is remarkably slow in relation to the very real urgency of improving water use in the Middle East.

Allocating and managing common-pool resources—an international challenge

Waterbury's recent analysis (2002) of the Nile Basin has provided a very useful framework for analyzing riparian relations. He draws attention to the relevance of collective action theory (Olson 1971) and to the notion of the veil of ignorance (Rawls 1971, 136–142). He suggests that contending riparian states will tend to free-ride—that is, use a common pool resource until it is exhausted, as theorized by Hardin (1968). He also notes, however, that there is much empirical evidence that contending users set up regimes that appear to be based on the assumption that an equitable outcome will be honored and sustainable and therefore more secure than Hardin's tragedy of the commons.

Free riding on the one hand, and cooperation on the other, all take place under circumstances of uncertainty. Water policy is made, and negotiations over water have perforce to take place, behind a "veil of ignorance" (Waterbury 2002, 36). Much of the analysis so far has confirmed the existence of such a veil of ignorance. It has been shown that insider perceptions of the status of the Middle East's water resources are not informed by realistic hydrological or water demand trajectories. Water policy is made behind a veil of ignorance on the basis of unsustainable economic and environmental assumptions. These assumptions are politically comfortable, and the incentive to construct them on the part of the coalition between political elites and farming communities has been compelling. Until the 1950s, during the era of regional water surplus, ignorance was not a problem. Decisions to increase the rate of water use up to this point were made within an envelope of local sustainable water security. In some

economies—for example, that of Egypt—local water was sufficient to meet water demands up until the early 1970s.

During the second half of the twentieth century, when local fresh water was no longer sufficient to meet total water demand, including for food production, the veil of ignorance remained in place, because to lift the veil would have resulted in serious political instability. Water security was succeeded by water insecurity without any political scrutiny of the status of the underlying resource. The outcome of any professional scrutiny was subordinated to the prescribed discourse, which held that there was sufficient water.

Waterbury (2002, 58ff) also usefully identifies the following regimes: the colonial regime (1880–1950), the Cold War regime (1950–1990), and the post-Cold War regime. The riparian states and outside powers operated in successive regional regimes to achieve either actual water security or constructed water security. Some riparian states were much better equipped than others; some international players participated during only some of the regimes.

Table 2 analyzes, for the three different regimes, the external and internal players and when the region was *actually* water secure and/or secure as constructed in the political discourses on water. The analysis also shows that the region as a whole was actually water secure until about 1970, although a number of the regional economies began to be

water insecure during the 1950s and 1960s. From the 1950s on, some economies were only secure if virtual water was included in the equation of availability. Virtual water ensured water security from 1970 for the region as a whole.

Table 2: An analysis of water security in the Middle East during three international water regimes – 1880 to the present.

Regime	International hegemon(s) & 'entrepreneur(s)'	Regional hegemons Jordan, T&E, Nile	Resource status: Constructed	Resource status: Actual	**Source of security**	Riparian relations
			The veil of ignorance			
Colonial 1880–1950	UK & France	-	Secure	Secure	Local water	Non-conflictual
Cold-War 1950–1990	U.S. & USSR	Israel, Turkey, Egypt	Secure to '70	Secure to '70	Local water	Conflictual- no war
			Secure post-'70	Insecure post-'70	Imported virtual water	Conflictual- no war
Post-Cold War 1990–?	U.S., EU countries, World Bank, UNDP, EXACT, etc.	Israel, Turkey, Egypt	Secure	Insecure **WORSENING INSECURITY**	Imported virtual water	Mixed - some conflict but significant cooperative initiatives

Source: Periodization based on Waterbury 2002; analysis by the author. See also EXACT 1998, Waterbury 1979, Abate 1994, Kibaroglu 2002.

The most important feature of Table 2 is the sequence of riparian relations. During the water secure colonial regime, when local water was sufficient for the economic needs of the riparian states, river basin relations were non-stressful.

During the Cold War regime, riparian relations were conflictual in all three major river basins. The level of conflict was discursively trenchant, but only in the early 1960s did conflict take the form of military combat. Even then, the geographical scope of the military strikes was very limited. Minor armed conflict occurred over water in the upper Jordan between Israel and Syria between 1992 and 1995. The former wanted to take

water from the upper Jordan for its Water Carrier Project. Syria countered by attempting to construct a link between its Jordan tributary, the Banias, to the Yarmuk, which marks the boundary between Syria and Jordan. Both used artillery and armor to stop construction, and Israel sent in air strikes (Elmusa 1996, Wolf 1995a, Medzini 2001). Water was not, however, a major security goal of the 1997 war (Medzini 2001, Haddadin 2002).

The first half of the Cold War era was one of incipient water insecurity. Both superpowers showed considerable interest in contributing to improved relations over water as well as in ameliorating the problem with investment and technology. The Eisenhower Administration sponsored the comprehensive review of water allocation in the Jordan Basin (Lowi 1994). The protracted Johnston Mission, from 1952–1955, produced a technically acceptable allocation. But Arab governments rejected the proposals, because to have accepted them would have implied recognition of Israel. The outcome was just one of many examples of the international allocation and management or water in the region being subordinate to other priorities of international relations. Israel was significantly aided by the failure of the Johnston initiative, as their water related economic problems could be solved invisibly and silently by virtual water imports. In addition, Israel's relative hegemonic position meant that it could implement its water projects with impunity for the rest of the twentieth century. Israel was able to achieve its Johnston allocation, and Jordan was the loser. During the late 1960s and through the 1970s, Syria developed the waters of the upper Yarmuk for irrigation and reduced the

flow of the Yarmuk by over 200 million cubic meters per year.

On the Nile, the superpowers were influential throughout the Cold War years. Egypt's Nasser government was close to the United States between the revolution in 1952 and the 1956 Suez War. The United States had supported the World Bank's intent to finance the Aswan High Dam, which would secure Egypt's water regime for perhaps half a century. The rift with the West which followed the Suez War and Egypt's decision to turn to Eastern Europe for arms made it possible for the Soviet Union to adopt a highly strategic role in Middle Eastern affairs. The Soviet Union provided essential financial and technical support for the High Dam. As the main global ally of the leader of the Arab world, the Soviet Union held a position of strategic parity with the United States in the Middle East until the death of Nasser in 1970.

The United States was also active in the upper Nile Basin. Emperor Haile Selassie of Ethiopia was happy to be supported by the United States. In the 1960s, comprehensive technical surveys of the hydro-electric potential of the Ethiopian Nile tributaries were carried out by the U.S. Bureau of Reclamation and the U.S. Army Corps of Engineers (USBR 1958, U.S. Army Corps of Engineers 1957, Waterbury 1979). Superpower alignments changed dramatically in 1973–1974. President Sadat of Egypt sensed that the Soviet Union was not a safe long-term ally, not least because it could only meet Egypt's grain deficit by purchasing U.S. grain for Egypt with scarce Soviet hard currency, and acted to diminish the Egyptian–Soviet relationship. In 1974, a revolution in

Ethiopia replaced the Selassie monarchy with a socialist regime, which quickly aligned with the Soviet Union. In the event, the economic and environmental predicament of the Horn of Africa was not a challenge that the Soviet Bloc could significantly ameliorate. The 1974–1994 period was one of stagnation in the upper Eastern Nile, where Ethiopia's Nile tributaries account for about 85 per cent of the annual flow of the whole Nile Basin. At no point during the Cold War era was it possible to mobilize resources to impact the flow of the upper Nile tributaries. Cold War hydro-politics on the Nile, and especially the global dimensions of those hydro-politics, were at all stages either by intent or by default favorable to downstream Egypt and the Sudan.

The seriously worsening trajectory of water insecurity during the second half of the Cold War era has been continued in the post-Cold War period. Riparian relations have, however, been significantly different from those of earlier decades, namely because there has only been one superpower. In the Jordan Basin, a peace agreement, which included articles on water, was signed in September 1993 by Jordan and Israel (Allan 1996b, 207ff). The Oslo Accord between Israel and the Palestinian Authority, also with articles on water, was signed in late 1993 (Allan 1996c, 223ff). These Jordan Basin agreements exemplify the incremental hydro-political adjustment possible in the post-Cold War world. Israel insisted on the incremental process, with sequential bi-lateral arrangements; Israel had no confidence that a comprehensive approach would be progressive (EXACT 1998).

The formal progress toward cooperation over water of the mid-1990s came to an end with

the assassination of Prime Minister Rabin in 1996, but informal discussions continued. While these showed that water professionals on both sides could arrive on a shared understanding of resources, common standards, and an awareness of the risks of non-cooperation (Feitelson and Haddad 2001), the confrontational and violent politics of the 1997–2002 period brought a regressive phase in water relations between Israel and the Palestinian Authority.

The post-Cold War hydro-political regime started favorably in the Jordan Basin, with unexpected and unprecedented formal agreements. After six years, the trends towards convergence and agreement were reversed. Water relations were again shown to be subordinate to the four much more salient issues of Jerusalem, borders/territory, settlements, and refugees. In contrast, the Nile Basin the cooperative regime started much more slowly. In the Jordan Basin, the United States had taken a leading entrepreneurial role, albeit without demonstrating any confidence as a pilot. In the Nile Basin it has been the World Bank that has been the entrepreneur, supported by a number of other UN agencies such as UNDP and many bi-lateral aid ministries, notably that of Canada. By the early 1990s Egypt, after decades of opportunistic self-interest, insisting that all Nile Basin states had to agree any basin-wide initiatives, began to concede that cooperation could be diverse as well as universal. By 1996, one of the basin-wide committees—TeccoNile—drafted an action plan to spend $100 million on information gathering and confidence-building projects (TeccoNile 1996).

The World Bank used the creation of the 1996 TeccoNile Action Plan to build on the new political potential of riparian relations by convening a series of meetings to evaluate the action plan and introduce some new thinking. A new politics of water was possible first because of the imaginative leadership in Ethiopia, which addressed the resource and economic problems of the post civil-war state. Secondly, Egypt, having over-committed its annual 55 billion cubic meters of Nile flow, agreed with the Sudan and began to envision a future in which strengthened upstream riparian states would be safer allies than impoverished ones. Egypt supported the Nile Basin Initiative (2000), which was the outcome of a World Bank-sponsored process. By June 2001, a funding meeting in Geneva was able to assemble about $140 million for information-gathering initiatives and confidence-building measures such as investments in electric energy and environmental protection projects. In June 2001, the TeccoNile/Nile Basin Initiative process was given the name ICCON—the International Consortium for Cooperation on the Nile, with its headquarters in Entebbe (ICCON 2001).

Those expecting to find an explanation in the idealist/constructivist approach to questions of international relations would find in the sequential TeccoNile–Nile Basin Initiative–ICCON narrative an example of a cooperative regime that can emerge from a set of competitive, potentially conflictual circumstances. All has not run smoothly, however, as Egypt has seriously undermined its reputation as an honorable partner by its unilateral launch of its New Valley Project in 1998 (Waterbury 2002). The project will use whatever volumes of water might have been available for future detailed allocation

negotiations (Waterbury and Whittington 1998). The Egyptian initiative has made future contention more difficult than it might otherwise have been.

However, future negotiations about Nile waters will be embedded in the context of a complex regional and global political economy. Egypt will in practice become much more dependent on the global "problem-shed," where virtual water provides solutions. As its population doubles to between 120 and 140 million, Nile water will become minority water in the Egyptian political economy. The softening of the Egyptian approach to its upstream neighbors is a measure of the awareness on the part of its water policy elite that water for Egypt is not a just a Nile issue. Such ideas have not gained currency in public discourse, but they are having an influence on the direction in which Egyptian leadership is being articulated in the Nile Basin.

The changed posture of Egypt in the second half of the 1990s is a case of what Waterbury has termed "regimes beginning at home" Waterbury (2002, 52). He argues that collective action is determined by the accommodations permitted by national concerns, and not by principle. In situations where the allocation of resources might be discussed, negotiators bring to the table very narrow and mutually exclusive degrees of freedom. Various factors, such as the diversification and strengthening of a political economy, immensely expand the degrees of freedom for a riparian state actor. Such developments, and the associated increase in social adaptive capacity, affect how those running a political economy relate to options available in the global economy as well as to their

neighbors. Achieving a strong and diverse economy vastly increases the political and economic options of those managing a state. Egypt's options are constantly expanding. As they do, the constraints perceived to apply as a result of limited local fresh water resources will gradually be revealed to be non-strategic in terms of national security. Water security will be achieved through trade, a strong balance of payments, and dignified and reciprocal alliances at the regional and global levels. Nile water can never be the sole source of water security for Egypt. Nile water cannot meet the nation's new water demands. Global water can.

This narrative of the development of collective action over water in the Middle East has shown how the participating economies and global interests have constructed knowledge on the region's water resources during the three hydro-political regimes since the late nineteenth century. Resource constraints have been real since the middle of the Cold War era, but they have had limited impact on the way the increasingly scarce fresh water of the region has been managed. This lack of impact is due to the fact that the water predicament was constructed out of the political environment, which has determined, and continues to determine, water use and water policy.

Conclusion: The optimists are right but dangerous; the pessimists are wrong but useful.

Current and future self-sufficient water security must be underwritten by access to adequate shared water. If hydrologically-based water security exists, then hydropolitical tension is unnecessary. If hydrologically-based water security is impossible, as it is for all the Middle Eastern economies except Turkey, Lebanon, and arguably Syria and Iraq, then state security based on such water is unattainable. In these water-insecure circumstances, it is argued here that governments have a choice. They can either announce the insecurity or hide it by sanctioning the topic and preventing it from entering the national discourse. They can only do the latter if there is substitute water available.

The Middle East region has been fortunate in that it entered its period of progressively more serious water insecurity in an era when water in the global system was readily available, subsidized, and affordable in international trade via food staples. In the coming decades, the Middle East will be self-sufficient in neither food nor water, and as a result will suffer some level of insecurity. Virtual water imports will continue to provide the solution. Until 2000, they have been economically invisible and politically silent. One or more decades may pass before the peoples and governments of the region can publicly state their dependence on the global system. It is difficult to predict when the veil of ignorance will be lifted so that all water users in the region will become aware of the relative contributions of regional and global water to their water security.

It is a paradox that the water pessimists are wrong but their pessimism is a very

useful political tool, one that can help the innovator to shift the interdependent belief system of the public and their politicians. The water optimists are right but their optimism is dangerous, because the optimistic view of water resources in the region enables politicians to treat water as a low policy priority and thereby please those who perceive that they are prospering under the old order.

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Maps – for Allan 2002 – Water security in the Middle East

1 The Middle East and North Africa – major rivers

2 The Nile Basin

3 The Tigris-Euphrates Basin

4 The Jordan Basin

5 The Middle East – showing the security sub-complexes and the location of significant water resources. After Buzan in Buzan and Waever, 2003.