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**HYDROPOLITICS: SEARCHING FOR A SOLUTION
FOR THE WATER DISPUTE IN THE
EUPHRATES-TIGRIS RIVER
BASIN**

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Abstract

This paper will examine one area of the world, namely the Euphrates-Tigris River Basin and the dispute over water supplies. The conflict over water has become so serious that NATO allies under Article 5 may wish to intercede between the disputant nation-states of Iraq, Syria, and Turkey. The lack of enforcement mechanisms in the region and the ineffectiveness of the international law hinder the resolution of these water disputes. To add to the problem, other factors may in future contribute to water scarcity such as global warming and population increases. This paper will analyze negotiation strategies for mediating water-resource management between Turkey, Syria, and Iraq over water resources, especially those that focus upon mutual-cooperation. 'Game theories' are viewed as one vehicle for framing and understanding these complex issues. The paper will also emphasize the importance of economic interaction among the disputants for resolving water disputes.

INTRODUCTION

The issue of water and security is not new. According to Malthusian discourse, as populations grow, water scarcity increases, leading to inevitable water wars in the 21st century.¹ Many publications have anticipated these water wars despite the fact that no war has been fought over water in the Post-Cold War Era.² As Anthony Turton argues, water can be a cause of war or a direct target of war.³ Ashurbanipal of Assyria seized wells belonging to Arab enemies in seventh century.⁴ The level of conflict depends on whether a river or its associated hydraulic associations are the goals or a tool. One area that has received much attention is the Euphrates-Tigris River Basin. Conflict over water, short of war has occurred and has the potential to involve Turkey's NATO allies under Article 5 support. Attempts at international mediation over water have been unsuccessful. Global warming and population increase are exacerbating the conflict over water relative distribution. Soffer argues that, these two pressures could also lead to a water scarcity between 2020 and 2030 in both rivers.⁵ Salmi points out the security implications of water scarcity and argues that one of the critical elements in the overall problem surrounding water and conflict in the occupied Palestinian territory (and broader Middle East) is

¹ L.R. Brown, G. Gardner, and B. Halweil, *Beyond Malthus* (Norton: W&W Company, 1999), 100

² Two examples are J.Bulloch and A. Darwish, *Water Wars: Coming Conflicts in the Middle East* (London: Victor Gollancz, 1993) and "Water Wars Threaten to Engulf World," *The Express* March 20, 1999,19

³ A.R. Turton, "Water Wars in Southern Africa: Challenging Conventional Wisdom, Turton, Anthony R. *Water Wars in Southern Africa: Challenging Conventional Wisdom*. Water Wars: Enduring Myth or Impending Reality eds Hussein Solomon and Anthony Turton, (Umhlanga Rocks, African Centre for the Constructive Resolution of Disputes), 2000, 35-63.

⁴ Example quoted in G.Kemp and R. Harkavy, *Strategic Geography and the Changing Middle East* (Washington D.C: Carnegie Endowment for International Peace, 1997), 101.

⁵ A.Soffer, *Rivers of Fire, The Conflict Over Water in the Middle East* (Oxford: Rowman and Littlefield, 1999), 105

the “limited water resources themselves, which, in this semiarid region, are vital for development and impinge on wider security issues for all countries in the region.”⁶

Water in the shape of GAP⁷ project has been an important dynamic in Turkey’s relations with its southern neighbors, particularly Syria and Iraq and this dynamic threatened these states in terms of the relative water distribution of both rivers. The water conflict has not still been solved among the three countries.

The analytical tool that will be used in this paper is Buzan’s “security complex concept” a set of units whose major processes of securitization, desecuritization or both are so interlinked that their security problems can not be reasonably be analyzed or resolved apart from another.”⁸ Based on this concept, Michael Schulz defines this regional area as a distinct “hydropolitical security complex”.⁹ The level of analysis is regional but the focus will be on Turkey as a unit within the adoption of Buzan’s security complex involving Syria, Iraq and Turkey. The relevance of Syrian support to Kurdish Workers’ Party (PKK) will also be examined because it is used as an issue linkage to water. This paper will define the policy problem, analyze the situation with a factual background, suggest some alternatives and evaluate them. At the end, this paper concludes that increased economic exchange will lead to an arena for constructive negotiations on the resolution of the water dispute between the three countries. Before going into

⁶ R.H Salmi, “Water, the Red Line: The Interdependence of Palestinian and Israeli Water Resources,” *Studies in Conflict and Terrorism*, 20, no.1 (January-March 1997), 15-51

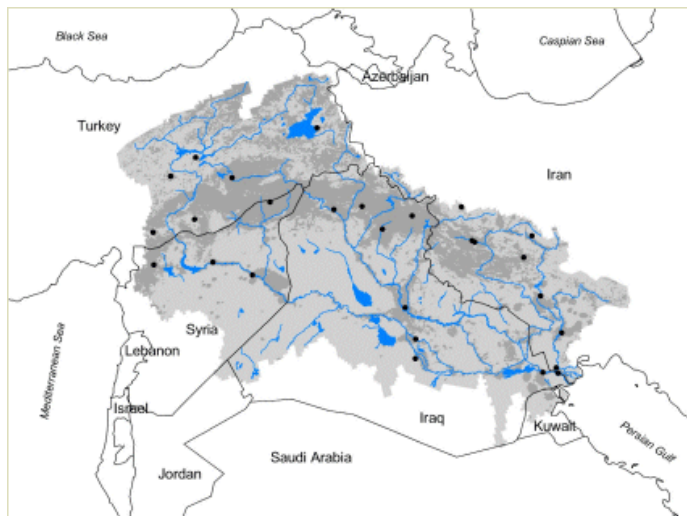
⁷ Turkish acronym for *Guneydogu Anadolu Projesi* translated as Southeastern Anatolia Project

⁸ B.Buzan, O. Waever, J. De Wilde, *Security: A New Framework for Analysis* (Boulder, CO: Lynne Rienner Press, 1998), 201 and B.Buzan, *People, States and Fear: An Agenda for International Security Studies in the Post Cold War Era* (Hemel Hempstead and New York: Harvester Wheatsheaf, 1991). *Securitization* means “the move that takes politics beyond the established rules of the game and frames the issue either as a special kind of politics or as above politics”, 23. Desecuritization is the opposite, that is, returning an issue to “normal “ politics

⁹ M, Schulz, “Turkey, Syria and Iraq: A Hydropolitical Security Complex” in *Hydropolitics: Conflicts over Water as a Development Constraint*, L. Ohlsson, ed. (London: Zed Books, 1995), 91-122

the analysis, it is necessary to look at the geographical context of both the Tigris and Euphrates rivers.

The Euphrates is around 1,875 miles long and flows through Turkey (41% of its length), Syria (24%), and Iraq (35%). The Tigris is around 1,164 miles long and flows through Turkey (21%), Syria (2%), and Iraq (77%). Syria's percentage of the Tigris' length is never entirely within that state; the boundaries with Turkey and Iraq run down the middle of that river for 22 and 5 miles respectively. Turkey contributes 88% and Syria remaining 12% to the Euphrates,¹⁰ while Syria contributes nothing to the Tigris and Iraq only a limited amount to the tributaries. Overall, Turkey contributes more than 70% of the United Euphrates-Tigris flow.¹¹ Consumption is almost in inverse proportion to contributions, with Turkey utilizing 35%, Syria 21% and Iraq 44% of the Euphrates river water.¹²



Map 1: The Euphrates and Tigris River Basins

Source: Revenga, C., S. Murray, J. Abramovitz, and A. Hammond, 1998. *Watersheds of the World: Ecological Value and Vulnerability*. Washington, DC: World Resources Institute.

¹⁰ T.Naff and R.C. Matson, *Water in the Middle East Conflict or Cooperation* (Boulder Westview Press, 1984), 84

¹¹ Figures from N. Kliot, *Water Resources and Conflict in the Middle East* (London: Routledge, 1994), pp. 114-116

¹²F. M. Lorenz, E.J Erickson and B.R Shaw, *The Euphrates Triangle: Security Implications of the Southeastern Anatolia Project*, (Washington, DC: National Defense University Press, 1999), 7

DEFINITION OF THE POLICY PROBLEM

The central problem is regional in the Euphrates-Tigris river basin. As Miriam Lowi argues, “ the Euphrates River rises in Turkey and flows southward into Syria and then into Iraq. The two downstream riparians¹³ are highly dependent upon the river flow for agricultural development, while Turkey as an upstream country has become increasingly dependent upon the river since the mid-1960s by virtue of the GAP (Southeast Anatolia Development) project, a massive water management scheme that includes dam-building and diversions. In the absence of a basin-wide agreement that stipulates who gets what from the river, when and how, Turkey, as the upstream riparian and the strongest state in the basin, is able to requisition what it wants from the river system. On a number of occasions, in fact, the flow entering the two countries was reduced considerably, and although Syria and Iraq complained vociferously about this, Turkey was not contractually bound to behave otherwise.”¹⁴

Iraq and Syria view the Tigris and Euphrates as international rivers to be commonly utilized. Turkey regards the water usage as a sovereign right. Two key principles emerged in International Law Association 1966 Helsinki Rules, which stated that existing use would have to make room for a new use with equal apportionment. This clearly favored Turkey as an upstream state. The second principle, developed from the 1972 United Nations (UN) Conference on the Human Environment, did not sanction the equitable principle but preserved rights to existing users. This favored the downstream states Iraq and Syria, although the latter could use the first principle in arguments over Euphrates water with its downstream neighbor, Iraq. The UN

¹³ *Riparian* means pertaining to the bank of a river or a stream.

¹⁴ M.R. Lowi, “ Political and Institutional Responses to Transboundary Water Disputes in the Middle East”, available from at <http://web.macam.ac.il/~arnon/Int-ME/water/Lowi%20Water%20Disputes%20in%20the%20Middle%20East.htm>; Internet; accessed on 4 April 2005

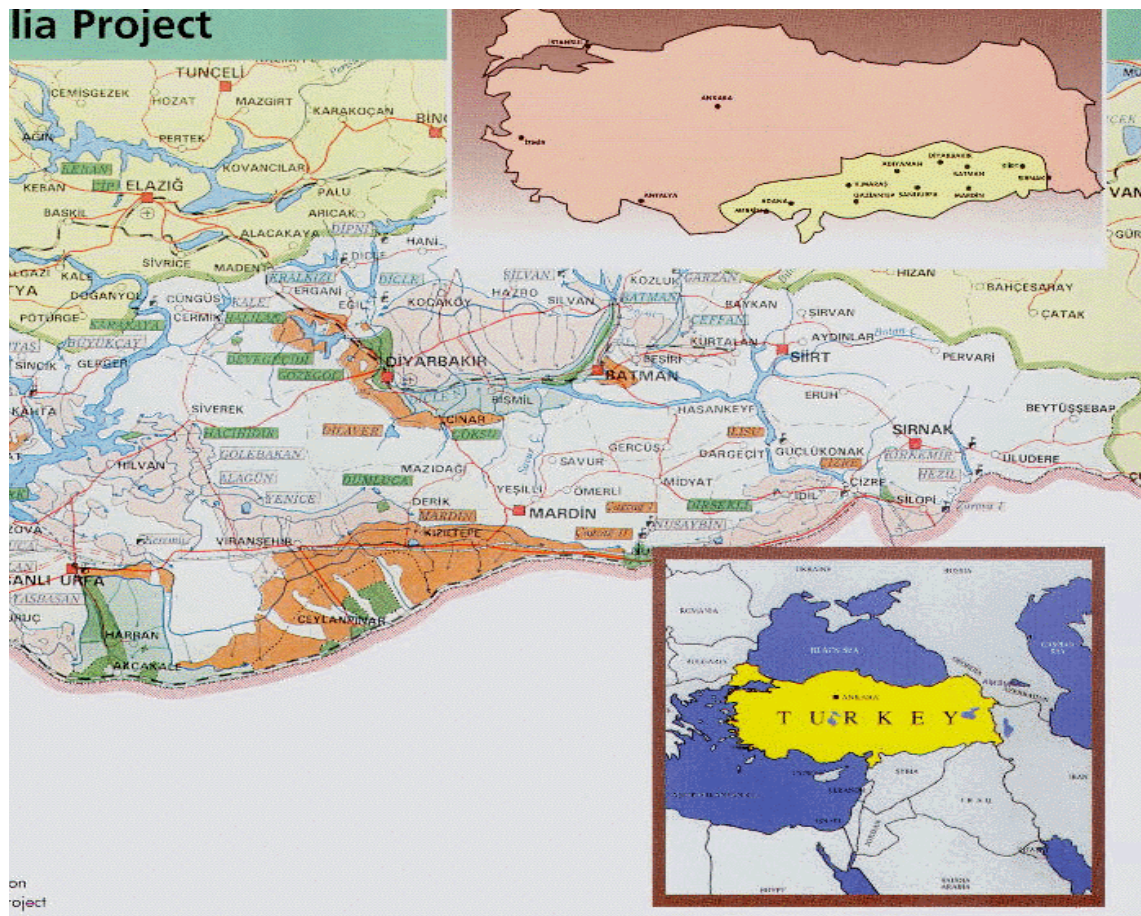
adopted a convention on the principles on the "non-navigational uses of international watercourses" in May 1997. Only Syria, not Iraq and Turkey signed this. Turkey objected to Article 7, which states that all countries have an "obligation not to cause significant harm." There is no international court to which states have recourse, unless all parties agreed to this happening. Now that Iraq is under transformation, we will have to see how the new Iraqi administration will react to the water issue. This is certainly unclear now.

GAP Project

Turkey has undertaken the Southeastern Anatolia project (Güneydogu Anadolu Projesi), which is the only the latest attempt to harness the waters of Tigris-Euphrates river basin for irrigation purposes. The project encompasses 6 provinces in the Southeastern Turkey covering an area of 73,863 km squares and 9.5% of Turkey. Upon the completion of the project, 28% of Turkey's total water potential will be brought under control, 1.7 million hectares of land will be under irrigation and 27 billion kilowatt hours of electrical energy will be generated annually through building 22 dams, 19 power plants and 25 irrigation systems.¹⁵ It has been estimated that the project could cause Syria to lose up to 40% of its water from the Euphrates and Iraq as much as over 80% from both rivers by 2010.¹⁶

¹⁵ See UN Website <http://www.un.org/Depts/Treaty> and for more details on the shortcomings of International Law, see G. Shapland, *Rivers of Discord: International Water Disputes in the Middle East* chapter 7. Figures taken from *History of Southeastern Anatolia Project (GAP)* (GAP Regional Development Administration, 1998), 1-2

¹⁶ P. Mac Quarrie, "Water Security in the Middle East: Growing Conflict over Development in the Euphrates-Tigris Basin", (Masters Thesis, Trinity College, 2003,20). This thesis is also available from http://www.transboundarywaters.orst.edu/publications/related_research/MacQuarrie2004.pdf; Internet; accessed on 4 April 2005



Map 2: GAP Provinces

Source: Adiyamanli Organization Website http://www.adiyamanli.org/ataturk_dam.htm

Water also has security implications that might lead to war. Turkey and Syria almost went to war in October 1998 when Turkey publicly charged Syria with support to PKK and threatened military action unless Syria complied with Turkish demands.

SITUATIONAL ANALYSIS: FACTUAL BACKGROUND

In order to understand the dynamics of water conflict between the three countries and to give some recommendations, it is imperative to look at Turkey's securitization of the water issue in the shape of GAP and its linkage with Turkey's external conflicts with Syria and Iraq.

External conflict with Syria over GAP. The Syrian position on the GAP project was one of fear of its potential economic and military threats to security. Syria was in an unfavorable

hydrological position regarding the Euphrates due to its midstream position and great dependence on that river for hydroelectricity and irrigation. The irrigated area produced over than 50% of the value of total agricultural production on about 18.6 percent of the cultivated land in 1999.¹⁷ Due to old-fashioned techniques and financial problems, the area of cultivated land increased from 11% to 16% in Syria between 1986 and 1998.¹⁸ A great deal of friction was due to the perception that Turkey did what it wanted without any consideration of the downstream effects. The acute drought of 1999 was aggravated by the Turkish use of groundwater that fed the river Khabur (over the past 5 years the flow diminished by half), and seemingly reduced water flows as Turkish factories shut for the “Eid” holidays.¹⁹ Turkey accused Syria of complaining unnecessarily and argued that Syria had plenty of water but it did not use it properly. The Syrians, in the 1950’s by using their own resources, made extensive use of river Khabur for irrigation, building dams and draining the Ghab swamps.²⁰

In September 1994, Syria and Lebanon signed an agreement to divide the waters with the latter allocated 20% and Syria the remainder. Syria refused to discuss the Orontes river formally with Turkey as it regarded this river, which rises in Bekaa Valley in Lebanon before flowing to Syria into the contested province of Hatay, as running entirely within Syrian territory.²¹ Any negotiation would have been tantamount to acknowledging Turkey’s sovereignty over the Hatay

¹⁷ Figures from FAO (Food and Agriculture Organization at United Nations) Website, available from <http://www.fao.org>; Internet; accessed on 4 April 2005

¹⁸ G.Shapland, *Rivers of Discord: International Water Disputes in the Middle East* (New York: St Martin’s Press, 1997), 129

¹⁹ P.Seale, “Turkey and Syria: The War over Water,” *Middle East International*, June 4, 1999: 20-22

²⁰ N. Bershorner, “*Water and Instability in the Middle East.*” Adelphi Paper no 273, (London: The International Institute for Strategic Studies, 1992), p. 33

²¹ T.Naff and R. C. Matson, eds, *Water in Middle East: Conflict or Cooperation?* (Westview Replica Ed. Boulder, CO: Middle East Research Institute, University of Pennsylvania, 1984), 121-122

region.²² In turn, Turkish public statements frequently compared the GAP project with a parallel situation with Orontes. This rhetoric was deployed primarily to counter Syria's objections to the construction of GAP dams on the Euphrates, rather than water shortages in Hatay.²³ Despite the reduction of water entering Turkey, the state regarded the "ownership of Hatay" as more important.

One of the important cases is the filling of the Ataturk Dam in January-February 1990 which provoked great condemnation and posturing from Syria with support from the wider Arab world. It was also the catalyst for a wider discourse on "water wars" and is still quoted as an example of how water can be used by the upstream as a tool versus its downstream neighbors. The background narrative of the incident is as the following:

Turkey had signed a security protocol with Syria in 1987, which contained provisions for economic cooperation and a note setting out Turkey's commitment to allowing 500 cubic meters per second water flow at the Syrian border. This amount was to be a yearly average, and Turkey undertook to increase the flow during the following month if any given month's average fell below that figure.²⁴ From the Turkish perspective, Turkey did everything in its power to ameliorate the impact of filling the dam, including the dispatch of an official delegation to tour Damascus and Baghdad in order to inform downstream states of Turkish plans in detail.²⁵

The dam began to fill as Turkish engineers blocked the flow of the Euphrates on January 13, 1990. The following day Saddam Hussein dispatched his oil minister to Ankara to discuss the

²² A.Ventner, "The Oldest Threat: Water in the Middle East", *Jane's Intelligence Review*, February 1998, 25

²³ G.Shapland, *op.cit*, 147

²⁴ *Ibid.*, 121

²⁵ BBC Summary World Broadcast, Middle East/0672/C/2, "A Delegation had toured since the First Week of January," *Turkish Foreign Ministry Statement*, January 24, 1990

issue and on January 15, a note of protest was delivered to the Turkish ambassador in Damascus. Libya became involved on January 16, as did the Arab league on January 18, as its general secretariat issued a statement condemning Turkey. Water was finally released from the dam into the Euphrates on February 12, 1990. Syrian drinking water, hydroelectric power output and irrigation were affected, as were Iraqi winter crops. The incident did provoke the signing of an agreement between Iraq and Syria on April 16, 1990 to divide the Euphrates water on a percentage basis, but Turkey rode out this storm of protest linked to the wider GAP issue and never once wavered in what it perceived as a technical engineering phase. The dam was formally opened as an electric power generating plant on July 25, 1992.²⁶

Syrian support to PKK. Turkey's perspective on its security in the societal sector has been the primary factor in determining the direction of security policy. Syrian support to the Kurdish separatist organization, PKK, was crucial for Turkey. In the 1970's President Hafez Al -Assad identified the potential leverage that support to Kurdish insurgents inside Turkey could give to Syria. The PKK leader Ocalan fled to Syria in May 1979, primarily because of the support afforded in that country from radical Palestinian groups also located there. The PKK was allowed to develop its infrastructure within Bekaa Valley of Lebanon and Syria.²⁷ The PKK began its military operations against Turkey in 1984. In the mid 80's, the issue of Syrian support to the PKK and relative distribution of Euphrates water became linked informally at the interstate level. Turgut Ozal's (Prime Minister at the time) visit to Syria in 1987 resulted in an agreement whereby Turkey guaranteed a minimum water flow of a yearly average of no more than 500 cubic meters per second at the border; Syria in return promised cooperation in security matters.

²⁶ For the impacts of the dam filling and protests against it See, A. Soffer, *Rivers of Fire, The Conflict Over Water in the Middle East*, 92-93

²⁷ M. M. Gunter, *The Kurds and the Future of Turkey* (London: Macmillan, 1997), 26-27

The security promises of Syria did not materialize. In October 1989, Turgut Ozal suggested that Turkey might impound the Euphrates River water if Syria did not restrain the PKK.²⁸

Bilateral agreements in 1992 and 1993 proved to be worthless as Syria continued to support the PKK. There was a clear linkage between the triad of downstream effects of GAP, Syrian support to PKK and disputed ownership of Hatay.²⁹ In 1994 at a trilateral summit meeting between Turkey, Iran and Syria, the Turkish foreign minister Hikmet Cetin linked issues of water and terrorism with his Syrian counterpart, to no avail. The friction worsened as the PKK mounted operations in Hatay in 1995 as PKK insurgents fled to Syria after Turkish military operations in Northern Iraq. The linkage of the PKK to the GAP project continued to be noted by Turkey: “Syria is trying to use the PKK as a trump card in solving its problems with Turkey, especially in solving the water issue.”³⁰ Syrians used support to PKK as extortion in the water conflict.

Abdullah Ocalan, the PKK leader stayed under Syrian protection until the crisis of October 1998, when Turkey charged Syria with support to the PKK and threatened military action unless Syria complied with Turkish demands. Syria backed down and signed an agreement in Adana agreeing to close the PKK training camps in Syria. Syria also expelled Abdullah Ocalan who later offered an unconditional ceasefire and withdrawal of all PKK forces from Turkey.

During the 1998 crisis, senior level Turkish discourse attempted to delink water from the real issue at stake-Syrian support to PKK. President Demirel called Syrian linkage an excuse:

²⁸ R.K. Betts, *Conflict after the Cold War*, (NY: Pearson Longman, 2004), 578

²⁹ J.Bulloch and A.Darwish, 67-70

³⁰ President Suleyman Demirel at United Arab Emirates News Conference, reported on TRT TV, Ankara December 3, 1997. Please see for the Syrian use of PKK in the water conflict, B.Moller, ed. *Oil and Water: Cooperative Security in the Persian Gulf* (New York: I.B Tauris & Co. Ltd, 2001), 148

“There is not an issue of water today and there won’t be for 25 years.”³¹ Demirel also argued, “since this natural resource springs from our country, we have the absolute right to exploit it in the way we deem fit. Syria and Iraq have absolutely no rights in the waters of Turkey.”³² In January 1990, the Turkish President Turgut Ozal said, “rumors of an impending conflict between Turkey and its neighbors over water express a mistaken and misleading view. We can’t accept the allegations that the Ataturk Dam is going to have a negative impact on Syria and Iraq. On the contrary, it will be a source of prosperity for both countries.”³³ Turkey claimed that it gave its downstream neighbors as much water as they needed. However there was this incident, which revealed Syrian hostile intentions. Turkey captured a Kurdish leader, codenamed, “Fingerless Zeki” whose court defense detailed Syrian goals including water as being pursued through support to PKK in order to weaken the Turkish state.³⁴ When Hosni Mubarak tried to place water on the agenda, he was firmly informed by Ankara that Syrian support to terrorism was to be the only item negotiable. Only once this sine qua non had been settled could separate normal politics, including water politics, be discussed bilaterally.³⁵ Informed sources told Al-Ahram Weekly that both Turkey and Syria had also agreed to limit their discussions at this stage to Ankara’s allegations that Damascus is providing support to Kurdistan Workers’ Party which is fighting for self-rule in Turkey. This would mean setting

³¹ President Suleyman Demirel’s statement on September 9, 1998, *Anatolia News Agency*, September 10, 1998

³² A. Hammad, “Global Post Changes Point to Middle East Water Conflict”, *Middle East Mirror*, June 19, 2000, available from <http://www.globalpolicy.org/security/docs/water.htm>; Internet; accessed on 20 March 2005

³³ *Ibid.*

³⁴ “Kurdish Leader details Syrian, Iranian support to rebel organization, “*Anatolia News Agency*, October 15, 1998

³⁵ Please for October 1998 Crisis, see, “The Syria-Turkey Confrontation: Turkish Army’s New Chief is hardliner on PKK; Iran and Arabs Allege Israeli Role but Israel Denies it”, *The Estimate*, 10, no. 21

aside other contentious issues between the two neighbors such as water, Syrian claims over Hatay, and the “Phantom Alliance” between Turkey and Israel.³⁶

External conflict with Iraq. The GAP project presented a lesser threat to Iraq than Syria because GAP focused on Euphrates River, which is less important to Iraq. Iraq was also distracted, first by the Iran-Iraq war and then the Gulf wars and its ensuing sanctions. Now that there is a power vacuum in Iraq, water issues have been far back in the agenda of Iraq, which is in the state building process. Turkey and Iraq have been economically dependent on each other due to Turkey’s role as conduit for Iraqi oil. Iraq often blamed Syria for its reduced water share. Blame of oil salinity was attributed to GAP developments upstream but also to the absence of drainage facilities, higher evaporation rates in the climate and irrigation practices used.³⁷ Saddam Hussein appeared to delay repair of war damage to water systems as such statistics suited his campaign to lift sanctions.³⁸

No major GAP development took place before Iraq invaded Kuwait on August 2, 1990. The economic ties between Turkey and Iraq were strong and Turkey did not close the Kirkuk-Yumurtalik oil pipeline until August 8 1990. As Hale states, “at this stage, the government appears to have assumed that it could preserve its neutral attitude in what was seen as a purely inter-Arab dispute, without damaging its links to the Western powers.”³⁹ Turkish troops were not sent to the Gulf and the decision to allow the use of Turkish airbases for operations against Iraq

³⁶ A. Saqr, Al-Ahram Weekly Online, “Damascus Stresses Dialogue”, 15-21 October 1998, available from <http://weekly.ahram.org.eg/1998/399/re1.htm>; Internet; accessed on 20 March 2005

³⁷ “One Man’s Joy in Iraq” *The Economist*, February 12, 2000, 70

³⁸ M.Edwards, “Eye witness Iraq,” *National Geographic*, November 1999, 8-27

³⁹ W.Hale, “ Turkey, the Middle East and the Gulf Crisis,” *International Affairs* 68, no. 4 (1992), 683

was taken the day before the air war was commenced, but the Turkish deployments did tie down 8 Iraqi divisions along the westernmost border along Tigris.⁴⁰

After reviewing the external conflicts of Turkey with its southern neighbors, the next section will focus upon the possible solutions for the water dispute between the three countries.

ALTERNATIVE POLICIES

- 1.** Creating an institutional mechanism to determine equitable, rational and optimum utilization of water resources through a scientific study, which will determine the water needs of each riparian country. Cooperation options include shared information and technology, interbasin transfers, and joint regional planning. Increasing supply through waste water reclamation, cloud seeding, desalination, fossil aquifer development is another option. Decreasing demand through rationing, population control, public awareness, efficient agriculture via drip irrigation, genetic engineering for drought and salinity resistance is the other option.
- 2.** Establishing an integrated regional water plan and creating water markets with a system of water carriers, desalination and pumping stations, constructed in stages.
- 3.** Importing foodstuffs (e.g cereals)
- 4.** Resolving initially the protracted political conflict before resolving a trans-boundary water dispute. Increasing economic relations may be a possibility to achieve that. This option is analyzed via interconnected games through game theory by linking issues of water and economic exchange in this paper.

⁴⁰ J. C. Peuch, "Turkey: Plan to Oust Saddam leaves Ankara between Ankara and a Hard Place", August 8, 2002, available from http://www.globalsecurity.org/wmd/library/news/iraq/2002/020808_082002151829.htm; Internet; accessed on 12 February 2005

POLICY EVALUATION

Alternative 1. *Creating an institutional mechanism to determine equitable, rational and optimum utilization of water resources.*

Benefits

Political stability and economic benefits. The steps in this direction can create a positive atmosphere which will facilitate cooperation and mutual benefits not only in the issue of water but also in other natural resources such as natural gas. These steps would increase the confidence-building processes between riparian countries, leading the way to political and economic cooperation. On the other hand, a crisis or a war possibility would be reduced.

Costs

The problems in transboundary cooperation originate from asymmetric information among riparian countries, existence of scientific gaps and technical uncertainties, lack of effective enforcement mechanisms and institutions, natural claims for sovereignty, unavoidable conflicting national and international interests, obvious asymmetric country characteristics, and geographical upstream/downstream considerations. that hinder cooperation.⁴¹ There are joint technical committees established between the three countries, but they stop functioning when there are tensions in political relationships. The issue that terminally divided the group in 1993 was a quandary over the formulation of a proposal to share the ‘international rivers,’ or a regime to determine the ‘utilization of a trans- boundary watercourse.’

⁴¹ R. Just, and S. Netanyahu, eds, *Conflict and Cooperation on Trans-Boundary Water Resources*, (Norwell: Kluwer Academic Publishers, 1998), 8-9. On the JTC Committees, please see A. Kibaroglu, *Building a Regime for the Waters of the Euphrates-Tigris River Basin*. International and National Water Law and Policy Series. (The Hague, The Netherlands: Kluwer Law International.2002), 226-7

Technological barriers

Asymmetric Information. A fundamental barrier to negotiation arises from asymmetric information among players.⁴² Riparian countries generally have asymmetric access to data and information because of differing data accessibility and differing abilities to process data.(e.g Israel and Palestine). A country may decide strategically to share the information fully, partially, or abusively. This strategic possibility raises uncertainty around the reliability of shared data. Therefore, effective agreements need to be as robust as possible to prevent the information asymmetries.

Scientific gaps and Technical Uncertainties. Scientific gaps often originate from inability to fully understand and measure physical processes or from nations' inability to agree on standards.⁴³ Scientific gaps create uncertainty with respect to the availability or quality of water. Quantifying water resources can be very difficult, especially in the case of an aquifer. Basin countries often dispute evaporation rates, flow rates(seasonal or annual), number of aquifers and the interactions among them, which make the estimation of water quantities very difficult.

Institutional barriers

Lack of Third party mediation. The other condition for resolving trans-boundary water disputes is that the active support and involvement of a Third Party be enlisted, or at least accepted, by the concerned parties. It is critically important that the mediator be perceived as being both impartial and firmly committed to a successful resolution of the dispute. It is fair to say that the international community has not shown much concern about the Euphrates basin conflict and its resolution; there have not been significant efforts at third party mediation.

⁴² Cited from R.Just, and S. Netanyahu, eds, *Conflict and Cooperation on Trans-Boundary water Resources*, (Norwell: Kluwer Academic Publishers, 1998), 9

⁴³ Ibid.

Enforcement limitations. Existing international legal rules offer guidelines for water allocation principles but have no effective enforcement power. In addition, sovereignty principles give nations the option of either not exposing themselves to international court or not accepting a third party ruling.⁴⁴ There was no international court to which the states had recourse, unless all parties agreed to this happening. There is no sign of three states moving to that direction until now.⁴⁵ Now that Iraq is under transformation, we will have to see how the new Iraqi administration will react to the water issue. This is certainly unclear right now.

Political barriers. While negotiating a *basin* related treaty, a country faces competing domestic and neighboring country pressures simultaneously. For example, giving up water to another country may affect the country's various domestic economic sectors differently, most likely affecting the agricultural sector the most. Accepting stringent pollution standards (i.e., giving up the right to pollute) as part of an international treaty may have a dramatic effect, for example, on specific domestic industries and/or agricultural practices. Domestic interest groups associated with these sectors are likely to oppose a "soft" international position, which complicates the work of policy makers and negotiators.⁴⁶

Asymmetric economic, demographic, military, and geographic power. Various countries have different levels of population densities, national income per capita, military power, and access to natural resources. These differences affect each country's ability to bargain over its share in a basin and to set effective threats. Turkey, as an upstream country is financially, economically and militarily superior to Syria and Iraq. A country that controls the source of water can

⁴⁴ R. Just and S. Netanyahu, *Conflict and Cooperation on Trans-Boundary Water Resources*, 10

⁴⁵ For more details of the shortcomings of international law, see G. Shapland, Chapter 7

⁴⁶ R. Just and S. Netanyahu, 10

potentially hold a major position in the negotiation process. Turkey had that locational leverage against Syria in October 1998 Crisis. With this perspective, agreements over cooperation can be achieved only if the dominant power in the basin accepts it.⁴⁷

Alternative 2. *Setting up an integrated regional water plan and establishing water markets can solve the problem with a system of water carriers, desalination and pumping stations, constructed in stages.*

Benefits

Political and economic benefits. As a water rich state and probably also to diffuse diplomatic protests and interstate friction, Turkey consistently articulated the cooperative benefits that an economic handling of water would bring and also expected to make some profit. From 1987 to 1991 President Ozal championed the plan to supply 1.1 billion cubic meters of water per year through two pipelines from Ceyhan and Seyhan rivers to Syria, Jordan, West Bank, Saudi Arabia and Israel. This plan would also contribute to the Arab-Israeli conflict resolution. The 1994 agreements between Israel and Jordan over ownership and use of mutually shared water resources were hailed by the international community as pointing toward a future resolution of the Tigris-Euphrates dispute. The attempts of Turkey to export “GAP” water to Middle East states including Israel had led European Union and US to think water security holistically in the region.

Costs

Economic and political costs. Political considerations and lack of investment capital prevent the implementation of the inter-basin transfers of water. All of these proposals are controversial, and all have uncertain economic and environmental costs. In addition, political disputes over

⁴⁷ Ibid., 11

who would control the pumping sites and water carriers make the construction of new facilities extremely unlikely in the absence of a lasting political settlement. On the other hand, some new sources of supply may eventually be developed as the economic value of water rises and as demands grow, but this solution has shortcomings depicted as the following:

- Desalination-Ninety-seven percent of the water on the planet is too salty to drink or to grow crops. This had led to great interest in devising ways of removing salt from water in the hope of providing unlimited supplies of freshwater. Indeed, by the beginning of 1990, there were more than 7,500 facilities worldwide producing more than 13.2 million cubic meters of freshwater per day.⁴⁹ More than half of this desalination capacity is in the Persian Gulf region, where inexpensive fossil fuels provide the energy necessary to run the plants.⁵⁰ For other regions, however, the high-energy cost of desalination continues to make unlimited freshwater supplies an elusive goal. In the long run, the use of desalination will be limited by the amount and cost of the energy required to purify saltwater. Unless unanticipated major technical advances reduce overall energy requirements or the price of energy drops substantially, large-scale desalination will always be limited to extremely water-poor and energy-rich regions.⁵¹

- Peace Pipelines-Variou proposals have been presented for pipelines to transfer water from Turkey to the Middle East and the countries around the Persian Gulf. Nicknamed the "Peace Pipeline," such a project would take water from the Seyhan and Ceyhan Rivers in southern Turkey as far south as Jidda and Mecca in Saudi Arabia and as Far East as Sharjah in the United

⁴⁹ K. Wangnick, 1990 IDA Worldwide Desalting Plants Inventory, report no. 11 (Gnarrenburg, Germany: Wangnick Consulting, 1990); and Gleick, "Water and Energy," in P. H. Gleick, ed., *Water in Crisis: A Guide to the World's Fresh Water Resources* (New York: Oxford University Press, 1993).

⁵⁰ K. Wangnick, 1990 IDA Worldwide Desalting Plants Inventory, report no. 11 (Gnarrenburg, Germany: Wangnick Consulting, 1990)

⁵¹ P. Yolles, and P.H Gleick, "Water, War and Peace in the Middle East", *Environment*, April 94, 36, no.3, 6

Arab Emirates. Along the way, water could be delivered to Damascus, Amman, Kuwait, and Israel.⁵² One version of the Peace Pipeline would deliver more than 1,000 million cubic meters of water per year, but little real progress has come of the various proposals. In part, the Arabs, particularly the Saudis, and the Israelis fear the political dominance of Turkey or the possible interference of other states across which the pipeline would pass. The recent Turkish threats to cut off Euphrates River water to Syria have not helped to lessen this perception. Variants on the longer pipeline, such as a shorter version extending only as far as Amman, have also been proposed. Such variants may have fewer political constraints, but many environmental, economic, and political problems remain to be resolved before such a major transnational construction project can begin.

This “peace pipeline” concept is hard to realize since Arab states including Syria do not want to pay for water since they do not want to be dependent on the Turkish monopoly⁵⁴. The fear of Turkish monopoly over water still exists. Arab suspicion of Turkish designs is further exacerbated by the Israeli factor. Israeli Turkish plans to deliver water from the Manavgat River, not far from Antalya (a city in the South of Turkey) to Israel using supertanker or huge water filled plastic bags towed by tugs were reported in 1994.⁵⁵

⁵² Ibid.

⁵⁴ S. Libiszewski, “Source of Life, Source of Strife,” *Swiss Review of World Affairs*, June 1994, 9-10

⁵⁵ A. Van Gent, “Turkey: Middle East Water and Islam,” *Swiss Review of World Affairs*, January 1994, 21

Alternative 3. *Importing foodstuffs (e.g cereals)*

Benefits

Political and economic benefits

Trade of virtual water is a mitigator of the conflict potential inherent in water scarcity. Virtual water is the volume of water used to produce a commodity such as wheat, which has been identified as one of the fundamental reasons why war over water has not erupted in the water scarce economies of the Middle East region. Basically, it is easier to meet national water deficits via the importation of water-rich cereals. It is estimated that 1 ton of wheat requires 1,000 cubic meters of water to produce, and if wheat can be purchased more cheaply than the cost of securing that volume of water, then it makes economic sense to do so rather to import that volume of water.⁵⁶

Costs

Political barriers and economic dependencies

There is no evidence that this concept took hold in Turkey, Syria or Iraq during the post-Cold War period. Turkey has ignored the important problem of securing the socioeconomic development of Southeastern Anatolia. Sanctions on Iraq affected Iraq's imports of food and agricultural products. It is clear that Iraq would adopt the "virtual water" concept because of its dependence on international trade specially after a stable regime is established. But in the long term, new dependencies arise from this situation, particularly in terms of a global economy that is characterized by a playing field that is skewed in favor of the industrial nations of the world.

⁵⁶ See T.Allan, "Virtual Water: A Long Term Solution for Water Middle Eastern Economies," paper presented at the British Association Festival of Science, University of Leeds, September 9, 1997.

Alternative 4. *Decreasing protracted political conflict via increasing economic relationships and starting the water negotiations with the help of an impartial mediator such as United States*

Mutual economic benefits

Turkey's efforts to offer water for peace were an important precursor to the negotiations with Israel on sale of water and the more general rhetoric on solving a regional shortfall in this scarce resource. This rhetoric can be related to increasing economic interdependency in the region opening up a free trade zone with Syria and transportation of Syrian natural gas.⁵⁷ This rapprochement between two countries is cemented by high rank official visits. Syrian President Bashar Al-Assad paid an official visit to Ankara in 2004, the first ever by a Syrian head of State. He was accompanied by a delegation of Syrian officials and businessmen.⁵⁸ This was a sign of a willingness of both parties to leave water conflict and Hatay issue aside and focus on economic issues instead under the umbrella of neighborhood strategy. So far, Al-Assad has supported continued dialogue: "there is now a common desire to develop relations."⁵⁹ Damascus wants to open up to Ankara and prefers diplomatic relations to conflict.⁶⁰

Although the steps to such an economic cooperation are flourishing, the game is still a non-cooperative international river game with a side payment:
For international river basins, static games may generate outcomes in which the upstream country has a dominant strategy not to cooperate with the downstream country, e.g., *Not Share* or

⁵⁷ "Turkey, Syria sign free trade agreement", *Reuters*, December 23, 2004

⁵⁸ "Syrian President begins landmark Ankara visit today " January 06, 2004 available from <http://www.hri.org/cgi-bin/brief?/news/turkey/trkpr/2004/04-01-06.trkpr.html#06>; Internet; accessed on 12 February 2005

⁵⁹ Bashar Al-Assad interview, *Al Wassat*, August 23, 1999, 10-17

⁶⁰ F. Sara, *As Safir*, "Turkey under the Neighborhood Strategy of Syria" Trans., By Press Broadcasting and Information Administration June 18 2001, available from; Internet; accessed on <http://www.byegm.gov.tr/YAYINLARIMIZ/DISBASIN/2001/06/19x06x01.HTM#8>, accessed on 20 March 2005

Clean up water. A dominant strategy would arise if a cooperative action makes the upstream country worse-off; an action such as reducing water use or increasing effluent treatment is certain to make the upstream country worse off than if it did not undertake the action. Consequently, the country’s “Do not Share water “action will dominate its “Share Water” action. Even though side payments are suggested from the downstream country to upperstream country, the dominant strategy of the downstream will most likely be” No Side Payment” action. If we consider a two by two international river game, the upstream country chooses between its actions-*Share* or *Not Share* water with the downstream country. The downstream country chooses whether to make a side payment to the upstream country.⁶¹

Syria

| | | | |
|--------|-----------|--------------|-----------------|
| | | Side Payment | No Side Payment |
| Turkey | Share | 1 1 | -1 3 |
| | Not Share | 2 -2 | 0 0 |

Fig.1. Prisoner’s Dilemma Games

⁶¹ R. Just and S.Netanyahu, 78-82. For Syria there are two options of action: Side Payment or No Side payment, for Turkey there are two options: Share or Not Share. Side payment is a direct utility transfer. The numbers in the boxes demonstrate the representative payoffs for each country. The top left off payoffs in each cell are Turkey’s payoffs; the bottom right payoffs belong to Syria. For example, if Turkey does not share water and Syria gives side payments, then the payoffs for Turkey and Syria will be (2, -2), respectively. These payoffs represent preference orderings and are arbitrary ranging from -2 to 3 from worst to best payoffs. These payoffs are not based on empirical analysis due to lack of data. Since Turkey and Syria are two largest players in the basin, I have constructed the game as two-party games, which exclude Iraq as an influential player. Given the state-building process in Iraq, water issue is not a priority and the inclusion of Iraq in the water negotiations can start with a legitimate government in place.

The outcome most preferred by the upstream country is *Not Share and Side Payment*, and its least preferred outcome is *Share and No Side Payment*. Dominant strategy for upstream is *Not Share* and dominant strategy for downstream is *No Side Payment*. These two dominant strategies determine the Nash equilibrium in which both countries receive a payoff of zero. This is the familiar “Prisoner’s Dilemma” outcome, where an equilibrium outcome is not optimal. This repeated interaction, however, introduces the possibility of rewarding cooperative actions such as *Share* and punishing the movements of *Not Share*. The equilibrium of the repeated games is *Share and Side Payment* and resolves the unidirectional externality.

Costs

Share and Side Payment outcome represents an application of the *Victim Pay* strategy since the downstream is bribing the upstream to share water. Nations are reluctant to implement these victim outcomes because they risk earning a “weak negotiator” reputation.⁶² The international community prefers a “polluter pay” regime, represented by the outcome *Share and No Side Payment* as stated in UN Convention in 1972. If there is a unidirectional flow, such outcomes are difficult to justify as rational outcomes unless they are carried out with economic exchange.

Another solution to the game is to increase the leverage of the weak downstream countries like Syria. The formation of interconnected games which link water and non-water issues to expand the range and benefits provided by negotiations across multiple issues can be considered. One issue linkage is suggested by Syrian support to Kurdish rebels under the PKK organization as a bargaining tool for water. Since the support by Syria has diminished after the October 1998 Crisis, additional linkages by Syria should be introduced. The implicit linkage in

⁶² K.G Maler, International Environmental Problems, *Oxford Review of Economics Policy* no. 6, 80-108

the interconnected game is demonstrated as below. The assumption is that Syria is better off when Turkey shares water in the Euphrates, and Turkey is better off when Syria ceases to support the Kurdish rebels. However, Turkey has a dominant strategy: to not share water. Syria's best response is to support the rebels. The iterated game has a dominant equilibrium of *Support and Not Share*. Although the *Not Support and Share* outcome could be an equilibrium under repeated play but this outcome has not occurred with the particular issue linkage. Syria had to back down in 1998 Crisis. As mentioned earlier, Syria's leverage is too weak in this linkage.

| | | Turkey | |
|-------|-------------|--------|-----------|
| | | Share | Not Share |
| Syria | Not support | 2 | -2 |
| | Support | 1 | 3 |
| | | Share | Not Share |
| | | 1 | 0 |
| | | Share | Not Share |
| | | -1 | 0 |

Fig. 2. Interconnected game-Syrian Support to PKK

Orontes river linkage is often thought as an additional linkage to increase the bargaining power of Syria. The Orontes River is a small transboundary river which flows north from Lebanon, into Syria and finally into Turkey, where it empties into the Mediterranean. The quantity difference between the Orontes and Euphrates is quite dramatic (1.1 bcm versus 32.8 bcm), two qualities make this issue compelling: The Turkish interest in utilizing the resource, and a notable Syrian opportunity to gain leverage as an upstream riparian. Gleick and others report that Orontes inflow into Turkey is severely contaminated by agricultural return flow from

Syrian irrigation in the Ghab Valley and by urban industrial pollution. They also argue that Syrian utilization has thus limited the use of the Turkish portion of the Orontes river.⁶³ This limitation has an impact only on Hatay, which is a contested province by both Turkey and Syria. This is a secondary agenda for Turkey, whose GAP project is estimated to divert 50% of the Euphrates flow, leaving remaining 50% for Syria and Iraq. This limits the water quantity and quality of Syrian land that needs irrigation along the Euphrates banks of Syria. This constraint also affects more than one province. Turkey still has an upstream leverage in terms of the massive development complex GAP Project. If we add a linkage with the Orontes River dispute in our interconnected game example, this linkage is still not strong enough to overcome the leverage Turkey has. Orontes is a small river, whose flow changes affect only one Turkish province, Hatay. Turkey can transfer water to Hatay from other provinces.

Turkey

| | Share | Not Share |
|-----------|-------|-----------|
| Abate | 1 | -1 |
| Syria | 2 | 4 |
| Not abate | 2 | 0 |
| | -2 | 0 |

Fig. 3. Isolated game -Orontes dispute

⁶³ Please see R. Just and S. Netanyahu for Orontes River linkage 81-82, P. Yolles and P. H. Gleick, “Water, War and Peace in the Middle East”, 6-15

This situation can be modeled as an isolated game in which Syria chooses whether to abate pollution, and Turkey decides whether to compensate Syria with a side payment. In the one period game, Syria's dominant strategy is to *Not Abate* Orontes River pollution, and Turkey's dominant strategy is *No Side Payment*. Conditioning the actions in the Euphrates River basin to outcomes in the Orontes River Basin is only possible when the impact of diversion and pollution is symmetric for both countries. In our case this symmetry is not maintained.

POLICY RECOMMENDATION

In the light of the above policy evaluations, possible solutions are increasing economic exchange and starting the water negotiations with a mediating, impartial party like United States. Now that the Syrian lever of "PKK support" has disappeared, the road to shared understandings will eventually lead to increased economic relationships, possibly ending the water dispute. In sum, all the other options included in this paper will be dependent on the increased economic relationships between the three countries and the ultimate trust and confidence building processes. The lack of financial investment and protracted conflicts hinder the inter-basin transfers of water. The Arab perception of "Turkish monopoly of water" still exists. Unless a third, impartial party intercedes, the water dispute will remain unsolved. The intervention of a big neutral power is the key to the water dispute between the three countries, especially to break down the Arab perception of "Turkish monopoly of water." The impartial mediator is also essential to fund the "Peace Pipeline," which would originate from Turkey and bring water to Arab countries in the Persian Gulf and Saudi Arabia.

While giving this prescription, it is imperative to recognize some constants, which might influence the optimistic outlook for the water conflict in the region. First, Iraq will enter this regional security complex as a full player once its sovereignty is restored. It is not clear what the

nature of the government will be in the future, but it is most likely to be a dovish one with a pro-democratic stance if it can balance its tribal issues. Second, the bloodless withdrawal of its occupation forces from South Lebanon in 2000 marked a change in Israeli strategy in the Middle East Process. The common foe, Syria would be diluted in the Turkish Israeli alliance. Another recent development is the withdrawal of Syrian forces to the east of the border with Lebanon. These two developments could help Syria deploy military capability North. Third, Turkey has revamped some of its repressive laws and policies such as reducing the military's role in political life, allowing Kurdish language programs, offering partial amnesty to PKK members. Despite these new reforms on the road to European Union, the PKK issue is still salient in the eyes of Turkey and the water issue still remains a technical issue.

The other important constant is the possible linkage of the Euphrates-Tigris Dispute to the Arab-Israeli Peace Process along with the water issues in the Arab-Israelian conflict. The 1994 agreements between Israel and Jordan over ownership and use of mutually shared water resources were hailed by the international community as pointing toward a future resolution of the Euphrates-Tigris dispute.⁶⁴ Syria linked its demands for Israeli water in the Arab-Israeli Peace process to achieving formal downstream rights on the Euphrates in the late 1990's. Syria saw a multilateral approach to the whole water problem as preferable to bilateral negotiations with Turkey where Damascus operated from a position of weakness. Turkey's reaction to this linkage was one of nervousness as U.S. pressure to achieve an Arab- Israeli peace settlement threatened to make GAP and control over the Euphrates-Tigris headwaters part of the wider negotiations. The U.S. proposal that was put forward in 1998 entailed the need to include Turkey in the discussions since the bulk of Syrian water comes from the north. This proposal was found

⁶⁴ Some commentators see Jewish lobby as the instigators, See interview with A.Zaman, *The Economist*, May 22, 2000

unacceptable in the Turkish diplomatic circles.⁶⁵ Any future U.S. proposal should take into consideration of the Turkish sensitivities towards this linkage to the Arab-Israeli Peace Process.

If we summarize this using game theoretic approach, this could be formulated as a game between U.S and Turkey regarding the linkage to Arab-Israeli conflict.

| | | Turkey | |
|------|----------|--------|-----------|
| | | Share | Not Share |
| U.S. | Not Link | 1 | -1 |
| | Link | 2 | 4 |
| U.S. | Not Link | 2 | 0 |
| | Link | -2 | 0 |

Fig. 4. Arab-Israeli Peace Process Linkage

We assume that U.S. is better off when Turkey shares water in the Euphrates, and Turkey is better off when U.S. does not link the dispute to the Arab-Israeli conflict. However, Turkey has a dominant strategy: to not share water. U.S.'s best response is to link the dispute to the Arab-Israeli Conflict. Can the U.S. achieve this linkage by more creative proposals without hurting the sovereignty of Turkey? A possible solution lies in the funding of *Peace Pipeline* by the U.S. and creation of a *Middle East Free Trade Area* with the initiation of Syria and Turkey.

⁶⁵ After U.S State Department Secretary, James Rubin had given a briefing on January 12, 2000 about the regional dimension of water; U.S ambassador in Ankara was called to a foreign ministry meeting. Please see more on the regional dimension of water, Alan Gresh, "Turkish, Israeli, Syrian Relations and their Impact on the Middle East", *The Middle East Journal*, no. 2 Spring 1998, available from at <http://209.196.144.55/articles/gresh.html>; Internet; accessed on 12 February 2005

CONCLUSION

The suggested solution comes from the Kant. *A spirit of commerce* contributes to peace. Being more developed economically and more active in foreign trade, democracies especially stand to benefit from international commerce and are self deterred from fighting wars against one another. Dense networks of commercial ties lead to interaction that over time produces the norms of mutual responsiveness and reciprocal adjustment. Through international commerce, Kant believed, "a peaceful traffic among nations was established, and thus understanding, conventions, and peaceful relations were established among the most distant peoples."⁶⁶ That would bring rapprochement in the issue of water in the Euphrates-Tigris basin and Middle East in general and possibly create a *Middle East Economic Union* reminiscent to European Union.

The idea of Middle East Economic Union also comes from the Kantian thought of a pacific union, which refers to the formation of a security community in which the idea of resorting to arms as a way of settling disputes becomes unthinkable.⁶⁷ Kant argues that a league of peace would "eventually include all nations and thus lead to perpetual peace."⁶⁸

In sum, water offers the real opportunity to break the nexus in the security issue in the long term. Now, Turkey views the GAP project as a comprehensive sustainable integrated regional development project. Whether this utopian vision turns into a hydropolitical security complex depends on the level of economic exchange in the Euphrates-Tigris basin.

⁶⁶ I. Kant, *Perpetual Peace*, trans. Lewis White beck, (New York: Bobbs-Merrill, 1957[1795]), 28.

⁶⁷ K. W Deutsch, et al, *Political Community and the North Atlantic Area: International Organization in the Light of Historical Experience*, (New York: Greenwood: 1957), 66-67

⁶⁸ I. Kant, *Perpetual Peace and Other Essays on Politics, History and Morals*, trans. Ted Humphrey, (Indianapolis: Hackett: 1983[1795]), 117

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