



A negotiation support system for disputes between Iraq and Turkey over the Tigris-Euphrates basin



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SUMMARY

This paper describes a flexible prototype negotiation support system (NSS), to be used in a participatory context, based on the negotiation setting that was suggested by Turkey: bilateral negotiations between Turkey and Iraq, annual analysis, the assumption that Iraq and Syria have no inherent water rights, differences in water entitlements or needs are neglected, analysis restricted to the Tigris-Euphrates basin, current irrigation technologies in Turkey and Iraq, and negotiations on water quantity and quality that account for national dam construction plans. The analysis is based on all principles of the 1997 UN Convention that are recognised by Turkey: net benefits defined at a basin level, equitable use, non-significant harm, maintenance of water quality. The goal is to achieve a balance of interests among the parties that combines analysis of the quantity and quality of water and the net benefits. The negotiation outcomes arise from simulated dynamic interactions between the parties. We demonstrate an application of the NSS based on plausible and reasonable, but tentative, data to provide insights into water allocation rules, side-payments, water requirements of the two parties, and cooperation. Allocations should meet Iraqi non-significant harm and equitable use constraints and allocate the remaining water to Turkey for agricultural use in the feasible negotiation scenario, whereas allocations should meet Turkish maximum agricultural water demands and allocate the remaining water to Iraq for agricultural use in the unlikely cooperation scenario.

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1. Introduction

The Tigris-Euphrates basin is classified as a “hot spot” where the potential for continued disputes, at least in the immediate future, is high, both if risk indicators are based on biophysical, socio-economic, and geographical variables at multiple spatial and temporal scales (Yoffe et al., 2003), and if risk indicators are based on the degree of dependence on the trans-boundary water resources, the degree of satisfaction of water needs, the geopolitical context, the geographical position of the parties involved in the negotiations in relation to the water resources (Redha, 2009).

Three main sources of water conflict can be identified in the Tigris-Euphrates basin, together with the populations affected by these sources of conflict: hydrological factors, national and international political factors, and interdependencies between the former and the latter sources. The hydrological sources are defined by the total average annual flow of the Euphrates, which is $33.58 \times 10^9 \text{ m}^3$ (hereafter, BCM = 10^9 m^3), which is much smaller than the

combined planned future consumption by Turkey (18.42 BCM), Syria (11.30 BCM), and Iraq (23 BCM), which totals 52.72 BCM (Gruen, 2000). Moreover, if the currently proposed irrigation projects are fully developed by Turkey, Syria, and Iraq, the water deficit is predicted to be 212 BCM for the Euphrates River and the water surplus is predicted to be 8.0–9.7 BCM for the Tigris River (Altinbilek, 2004). Finally, once Turkey's Southeastern Anatolia Project (in Turkish, the Güneydoğu Anadolu Projesi, GAP) is fully operational, this would reduce the water flows from the Euphrates River to Syria by 40% and to Iraq by up to 80% (El-Fadel et al., 2002). Klot (1994), Kolars (1994), and Altinbilek (1997) provide additional estimates for the year 2020, and Carkoglu and Eder (2001) provide a detailed description of the GAP project. In summary, because of these numbers, projects and expectations, some of these nations will face problems of scarcity, poor distribution of the regional water resources, or misuse of the resources (Wolf, 1997). Conflict already exists over how to share these water resources.

In terms of the national and international political sources of water conflict, all riparian states use the water problem as a domestic ideological tool by stressing the need for self-sufficiency with respect to water and food, regardless of the economic

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efficiency of such policies (Carkoglu and Eder, 2001). In this context, Wolf (1997) highlighted the following risk indicators: the perception of unresolved issues with neighbours, the involvement of developing regions, the role played by water in a nation's history, and the relative economic importance of agriculture vs. industry.

Haddadin (2002) identified the main challenges that must be met in the Middle East (imbalances between a nation's population and its water resources, national water management policy, social and economic development goals, international water management issues) and the main responses to be implemented by national and international parties. The interdependencies between international hydrological and national and international political sources of water conflict can be elicited by analysing unsuccessful past negotiations (El-Fadel et al., 2002; Kibaroglu, 2007; Daoudy, 2009). In summary, the relationships among these riparian countries before the end of the 1960s were relatively harmonious, with an emphasis on the development of flood control structures and the positive impact of water storage facilities to be sited in Turkey (Kibaroglu and Unver, 2000). From the 1960s to the 1980s, Turkey's projects were restricted to covering its hydroelectric energy requirements, with unilateral minimum flow guarantees provided to Iraq and Syria to gain access to international financing for dam construction. The protests by Syria and Iraq at this time were limited to the dam-filling period (Hakki, 2006). The 1990s Turkish shift from hydroelectric use of water to regional development, encompassing other economic and social improvements such as transportation, industrial employment opportunities, and improved education and health services, enlarged the scope and intensity of the conflicts (Kibaroglu, 2007). In other words, domestic water policy (i.e., intrastate relations) affected international water conflicts and cooperation, and vice versa (Giordano et al., 2002). In short, insights from this paper might be useful wherever sources of conflicts discussed above are crucial.

Four main approaches could be followed to resolve these issues, and these suggest four main corresponding negotiation strategies that could be potentially combined (Fischhenlendler and Feitelson, 2003). First, the establishment of a river basin commission (e.g., councils, commissions, and authorities) to optimally allocate, regulate, and redistribute water. This body could exchange information, undertake mutual monitoring, enhance norms, encourage a dialogue between upstream and downstream parties, and tax externalities such as water pollution or salinity. A good example of this approach is the Permanent Indus Commission (Zawahri, 2009). Second, the involvement of a third party to help bridge the gap between parties by seeking joint gains or providing financial incentives for the parties that are asked to bear the costs of the cooperation. The best-known example of this approach is the role of the World Bank in mitigating the conflict between India and Pakistan over water from the Indus River (Zawahri, 2011). Third, the establishment of links between issues (e.g., between access to water and oil pipelines) that widen the possibilities for trade-offs, where parties can make reciprocal concessions on issues of low concern in exchange for concessions on issues that are economically or politically important. Identifying a set of mutual advantageous deals increases the likelihood of reaching an agreement. A good example is the 1994 agreement between the USA and Mexico over the Colorado River, in which Mexico (downstream) improved its bargaining position by linking negotiations over the Colorado River with the Rio Grande River (Dinar, 2006). Fourth, the reference to an international water law that resolves water disputes by achieving a reasonable and equitable utilisation and sharing of the resource. The best-known example is the Israel–Jordan Treaty, in which only 5 out of the 20 UN Convention articles (Rahaman, 2009) are not explicitly covered (Shmueli and Shamir, 2001).

Although the establishment of a river basin commission could be a good starting point to initiate cooperation, it would likely be unsuccessful in the context of Turkey, Iraq, and Syria, as riparian states tend to act unilaterally and try to appropriate as much water as possible. This is because of several reasons. There is an imbalance between those who benefit from and those who pay for cooperation. Indeed, Iraq depends more than Turkey on the Tigris-Euphrates system for its socio-economic development (Yetim, 2002). Iraq would therefore have a greater incentive to actively seek a compromise position. Water shortages could be reduced by changing inefficient Syrian and Iraqi irrigation technologies to less water-intensive approaches such as drip irrigation (Yetim, 2002). Iraq and Syria would therefore benefit Turkey. Water degradation could be reduced by encouraging Turkey to adopt less intensive use of fertilizers and pesticides, and to instead use high-quality seed, during the GAP implementation process (Odemis et al., 2010). Turkey would therefore benefit Iraq and Syria. The commission might lack the financial resources to maintain itself, and might lack the capacity to act efficiently due to restrictions imposed by the parties (e.g., not giving the commission the power to require compliance with its recommendations by each party).

The involvement of an arbitrator is also unlikely to be successful in our context. Turkey has made clear that it does not want third parties to get involved in settling its water disputes with its neighbours (Yavuz, 2008).

The establishment of linkages might also prove to be an unsuccessful strategy. Indeed, the spatial interdependency between Turkey and Iraq is mainly unidirectional for both water quantity and water quality issues (Dinar, 2006). Similarly, the political interdependency between Turkey and Syria based on the “PKK card” (i.e., logistical support of Kurdish separatists belonging to the Kurdistan Workers' Party by Syria in an effort to induce Turkey to make concessions) recently became unimportant due to the significant decline in armed conflicts after the capture of PKK leader Abdullah Ocalan in 1998 (Carkoglu and Eder, 2001). However, Turkey might depend on Iraq for its access to oil and pipeline routes. Finally, not all issues are linkable (Sadoff and Grey, 2005), and the scale of the basin may not provide an agenda large enough for linkages to be invoked due to the narrow possibilities for trade-offs between political or economic issues.

The reference to international water laws is also unlikely to prove effective in our context. Indeed, Turkey has never signed the 1997 UN Convention, and is unlikely to be compelled by Syria and Iraq to agree on the establishment of water rights under this convention due to Turkey's control of crucial water resources in this arid region (Yetim, 2002). Furthermore, the strict application of international water laws should be complemented by mutual trust, respect, and confidence to ensure compliance. In short, approaches discussed above could be fruitfully complemented with a negotiation tool and its associated processes.

In other words, given these multi-facet sources of conflicts and these potentially failing negotiation strategies, the *goal of the present study* was to provide a flexible prototype negotiation support system (NSS), to be used in a participatory context, based on the negotiation framework proposed by Turkey (see Section 2.1): bilateral negotiations between Turkey and Iraq and between Turkey and Syria, annual analysis, no inherent water rights for Iraq and Syria, no accounting for differences in water entitlements or needs, analysis restricted to the Tigris-Euphrates basin, accounting for current inefficient irrigation technologies in Syria and Iraq, negotiation of water quantity and quality, and accounting for current national dam construction plans. Moreover, all principles of the 1997 UN Convention that are currently recognised by Turkey (i.e., planning based on net benefits at the basin level, equitable use, non-significant harm, maintenance of water quality) are

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