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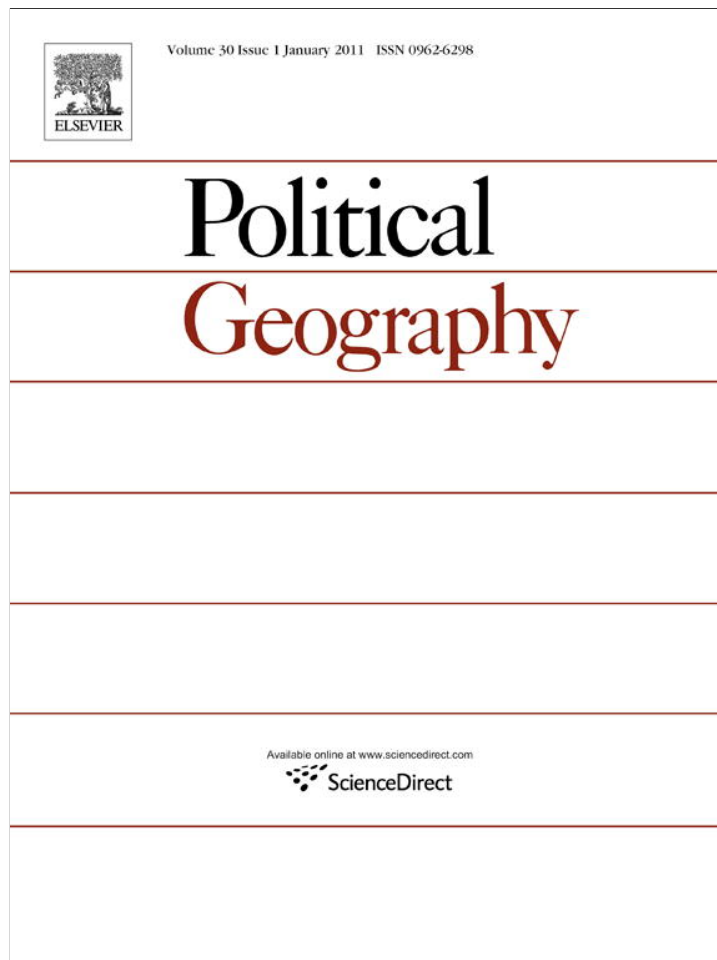


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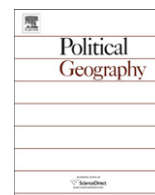
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Spatial and temporal dynamics of linkage strategies in Arab–Israeli water negotiations

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Water issues are inherently multi-faceted and therefore water policy often involves linkages to other issues. By providing opportunities for bargaining, use of policy linkages in transboundary water negotiations can increase the possibilities of reaching agreements; however, they also involve potential political costs. While there is ample theoretical literature on the potential benefits and risks of linkages in transboundary water negotiations, there is little empirical work exploring if, how, and why linkages are implemented in practice, especially in areas of conflict, in which they have perhaps the largest potential impact. This study evaluates the rationales behind decisions to adopt or refrain from linkage strategies by examining their actual use in Arab–Israeli water negotiations. The study finds that the likelihood, scale, and scope of linkages change over time, and they depend on factors such as the political climate, the level of trust between the parties, the degree of power asymmetry between parties, and political affiliation. Other variables such as size of negotiating parties were weakly correlated with likelihood of linkages. Knowing the opportunities and limits afforded by such linkages is crucial for negotiators and policy-makers who are often drawn to linkage strategies without considering their inherent risks.

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Introduction

The management of shared water resources is a source of political tension and an important subject for both formal and informal international negotiations, especially in water-scarce regions such as the Middle East. The presumed nexus between water and conflict is especially prominent in literature covering the Middle East, with many arguing that water is critical to any peace agreement between Israel and its neighbors (e.g., Lowi, 1993); views which were reinforced by inclusion of water as one of the five negotiation tracks of the Arab–Israeli peace process of the 1990s. A Neo-Malthusian literature stresses the potential for conflict over transboundary water resources, as growing populations place increasing demands on limited resources (e.g., Amery, 2002; Bulloch & Darwish, 1993; Starr, 1991). Alternative views downplay the risks of water conflicts, with many adopting functionalist approaches postulating that the critical nature of water is more

likely to promote cooperation between riparian nations, and that this may facilitate cooperation over other issues as well (e.g., Alam, 2002; Asmal, 2001; Postel and Wolf, 2001; UN, 2006).¹

Regardless of the research approach, one conclusion that is increasingly clear from the transboundary water debates is that the results of international water negotiations are not simple deterministic outcomes easily understood with a unitary actor model; but rather, products of complex interactions of actors and interests across multiple geographic and political scales (Harris, 2002; Harris & Alatout, 2010). International negotiations over shared water both impact and are impacted by multiple institutions representing a broad range of competing interests at the local, federal, national, and international levels (Alam, Dione, & Jeffrey, 2009). Harris and Alatout (2010) demonstrate that the political machinations involved in water negotiations can even impact nation-building processes within the negotiating states themselves.

Many observers have noted that one cannot understand international water negotiations and their outcomes without first understanding the underlying politics, and the use and abuse of space and scale (e.g., Dengler, 2007; Dinar, 2000; Furlong, 2006; Norman & Nakker, 2010; Sneddon & Fox, 2006). Much of the focus of such literature has been on issues of power relations and the importance of upstream–downstream positioning (e.g., Dinar,

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2009; Selby, 2005; Tir & Ackerman, 2009; Zeitoun & Warner, 2006). Studies addressing specific negotiation strategies used by parties in transboundary water negotiations, however, are less common. For instance, despite numerous studies addressing the politics of Arab–Israeli water, few, if any, have analyzed the actual negotiation strategies employed. An understanding of motivations for adopting specific strategies, conditions affecting their effectiveness, and how choice of strategies relates to other political, geographical, and environmental characteristics of negotiating parties is also critical to understanding negotiation outcomes.

One strategy often employed in international negotiations is that of linkage between different policy domains in order to leverage negotiating positions or to widen the range of politically desirable options (Haas, 1980). Water policy is a natural candidate for such linkages given its multiple uses in a broad range of policy areas, including security, environment, health, and economic development. Linkage strategies have been suggested in negotiations over water in particular as means for parties to counter the inherently asymmetrical relations between upstream and downstream riparians, in which the upper riparian often has less motivation to cooperate than the lower (Dinar, 2006; Fischhendler, Feitelson, & Eaton, 2004; LeMarquand, 1977; Wolf, 1997).

A related strategy is for negotiating parties to develop policy packages – bundles of policies, not necessarily related, that are negotiated and enacted jointly. Packages allow for tradeoffs between policy objectives, as parties can make concessions on issues they care less about in exchange for concessions on issues of more importance to them. Thus, policy packages offer opportunities to reach mutually agreeable bargaining outcomes on what may be a collection of zero-sum or intractable policy issues if addressed individually (Tinbergen, 1966). Many observers have demonstrated the effectiveness of policy packages as a means for resolving disputes over transboundary waters (e.g., Dinar, 2006; Fischhendler & Zilberman, 2005; Susskind, 1994).

Much of the literature on policy linkage and packaging has remained at the level of theory, with relatively little empirical work published exploring the actual use of different types of linkages and packages in practice. In Arab–Israeli water relations, many have stressed the potential of policy linkages and packages as means of advancing cooperation, but none have examined their actual usage and the factors that affect their usage. Using Arab–Israeli water negotiations as a heuristic case study, this study attempts to address this gap in the empirical literature and evaluate whether, and in what manner, negotiating parties have adopted strategies linking water policy objectives to wider political or economic agendas. It also examines the effect on linkage strategies of explanatory variables known to influence water negotiations, including the level of trust between parties, riparian position, balance of power, and the number of participants involved in negotiations (Daoudy, 2009; Dinar, 2006, 2009; Frey, 1984; Lowi, 1993; Tir & Ackerman, 2009; Wolf, 2007).

The paper proposes a conceptual framework for analysis of policy linkage and policy packages as they pertain to international negotiations over water. It then applies the framework to the case of Arab–Israeli water negotiations. We analyze a variety of empirical data sources, including a) published sources, such as historical texts, academic articles, and newsprint; b) interviews with Israeli and Arab policymakers and negotiators, and c) official protocols of meetings of the Israeli–Palestinian Joint Water Committee. A refinement of the basic model is then presented based on insights from the case study.

The study proceeds as follows: the following section provides a brief review of some of the theoretical and empirical literature addressing policy linkage and policy packages. Section “A typology of water-related policy linkage and packaging” presents a typology

of linkages available in transboundary water policy. Section *The case of Arab–Israeli water resources* applies this typology to the case of Arab–Israeli water relations. Section *Discussion* draws on the case study results to conceptualize the conditions for use of linkage politics, especially in conflict situations, and refine the basic model. Section *Conclusions* provides concluding observations.

Policy linkage and policy packages

Benefits and risks of policy linkage and packaging strategies

A longstanding literature exists covering the strategic advantages and disadvantages of intentionally linking policies (e.g., Haas, 1980; Tollison & Willett, 1979). The benefits of linking issues include allowing negotiators to enhance policy effectiveness, rebalance policies, build coalitions, and gain economies of scale (Charnovitz, 1998). Issue linkage may be positive – allowing for win–win opportunities (carrots) – or negative – presenting win–lose or even lose–lose options (sticks). An example of positive linkage is reducing existing trade barriers in exchange for enhanced environmental enforcement. Conversely, threatening imposition of new trade barriers if environmental enforcement is not forthcoming is an example of negative linkage. While many seek out potential win–win scenarios, some research has found that negative linkages often enable more efficient enforcement of agreements by allowing for penalties for non-compliance (Spagnolo, 2000).

Issue linkage may rely on narrow issue-specific reciprocity or on broader linkages across a range of issues. Which approach is chosen is neither random variation nor simple experimentation. States often base policy on issue-specific reciprocity when possible, but incorporate linkages across issues when the distribution or enforcement problems within a given issue area appear more severe (Mitchell & Keilbach, 2001).

Use of policy packages is often proposed as a means to overcome deadlocks in negotiations in situations in which a single policy tool is insufficient to address several objectives. Unlike simple linkage practices, policy packages are generally conscious efforts to build consensus among parties. Thus, they are unlikely to be exclusively negative or to be applied unilaterally.

Policy linkage strategies are not without potential costs. Tollison and Willett (1979) claim that “most of the highly publicized cases of proposed issue linkages appear to have been motivated by attempts of individual countries or groups of countries to extend their dominant bargaining or veto power in one particular issue area into other areas” (p. 425). Thus, linkage may benefit one party at the expense of another and reinforce power asymmetries. Second, the larger the number of issues involved, the greater the number of actors who may need to be consulted and affected parties who can be expected to attempt to influence negotiation outcomes. Thus, linkage often increases the transaction costs of policy negotiations and implementation (Tollison & Willett, 1979). Thirdly, linkage may be inefficient, as institutional resources may be diverted away from their best use toward interagency coordination. Fourthly, linkage may end up forcing actors to make decisions on issues beyond their own fields of expertise or may blur agency missions. Finally, opening negotiations up to linkages allows negotiating parties to hold issues “hostage” as bargaining chips. Thus, linkage may sabotage the chances of reaching an agreement on issues that could more easily be attained with negotiations of more limited scope. Parties may wish to avoid opening a “Pandora’s Box”, in which a precedent of policy linkage leads negotiating partners to include a multitude of outstanding or sensitive issues (Charnovitz, 1998).

As a result of these potential costs, policy linkages run a risk of producing results that are worse on issues of importance to one or

more parties than what they could achieve through unlinked negotiations. Bagwell and Staiger (2001) found that linking negotiations on trade with negotiations on domestic standards offered no benefits that could not be obtained without linking. Limão (2005) found that if the policies are unrelated, “linkage promotes cooperation in one policy at the expense of the policy that is easier to enforce under no-linkage” (p. 175). In sum, the empirical evidence whether policy linkage is beneficial is “decidedly mixed” (Horstmann, Markusen, & Robles, 2005) and is context dependent.

Policy linkage and packaging strategies in water management

A specific sub-literature exists dealing with issue linkage in international environmental and natural resource issues (e.g., Cesar & de Zewe, 1996; Charnovitz, 1998; Copeland, 2000), including in transboundary water agreements (Beach et al., 2000; Daoudy, 2009; Dinar, 2006, 2009; Fischhendler & Zilberman, 2005). Several characteristics of transboundary water make it a good candidate for linkages. Firstly, a broad range of issues are affected by water quantity or quality. Integrated Water Resources Management (IWRM), which calls for a multi-faceted, interdisciplinary focus on water policy decision-making, has become a dominant “discursive framework of international water policy” (Conca, 2006: 126). Thus, a wide diversity of stakeholders may be seek to influence some aspect of negotiations. Secondly, transboundary water issues often have upstream-downstream relations, which are inherently asymmetrical. This may lead to linkages in at least two ways: a) upstream countries may attempt to use linkages to leverage their advantage as parties with the ability to unilaterally affect flows, or alternatively, b) downstream riparians may attempt to counter their geographical disadvantage by expanding negotiations to include elements in which they have an advantage (Fischhendler et al., 2004; Salman, 2010).² Finally, as water supplies are inherently stochastic, policy linkages can mitigate the effects of uncertain supplies by providing measures such as side-payments to compensate parties for periodic fluctuations in or disruptions of supplies (Dinar, 2006).

The following section presents a typology of water-related policy linkages and packages. The typology used herein proposes two dimensions along which water policy linkages may occur: geographic scale and scope of issues addressed.

A typology of water-related policy linkage and packaging

Geographical scale

Many water professionals claim that the watershed represents the most natural unit for analysis and policymaking, and stress that political or administrative units that do not respect watershed boundaries are likely to lead to inadequate policies (e.g., Newson, 1992). Political and economic realities, however, often complicate implementation of watershed approaches. In this study we use watersheds as one category in our typology of linkage strategies. We divide policy linkages into two geographical scales: 1) intra-basin linkages: those dealing with water issues within a single shared watershed or sub-watershed, and 2) interbasin linkages: those that address water issues across multiple watersheds. *Ceteris paribus*, an interbasin approach will entail more limited opportunities for linkages than interbasin approaches.

A simple example of intrabasin linkage is when one party forgoes claims to a body of water in exchange for rights to a different body of water in the same basin. Such was the agreement between India and Pakistan in the Indus River Treaty, in which each state was given rights to the tributaries originating in its territory. Interbasin water linkages entail linking water or water-related benefits in one basin to some type of benefits in another

basin. Expanding geographic scale increases opportunities for bartering. South Africa, Swaziland, and Mozambique jointly negotiated the Tripartite Interim Agreement on the Protection and Sustainable Utilization of the Water Resources of the Incomati and Maputo Watercourses, for instance, after years of deadlock in attempts to come to an agreement on the management of the waters of the Incomati River alone (Van der Zaag & Carmo Vaz, 2003). However, linkages across basins also raise the likelihood that parties will seek to penalize one another for actions in one basin by retaliating in another. For example, Mexico, the downstream riparian of the Colorado River, improved its leverage vis-à-vis the United States by linking negotiations over the Colorado to those over the Lower Rio Grande (Fischhendler & Feitelson, 2003). However, years later the Texas delegation to the U.S. House of Representatives introduced a resolution to withhold deliveries of Colorado water in retaliation for Mexican policies on the Rio Grande (EDF, 2003).

Issue scope

The second parameter in our typology is the scope or breadth of issues linked. We divide linkages into three such categories: 1) single water issue, 2) multiple water issues, and 3) water and non-water issues.

Single water issue linkages deal with only one aspect of water management; for instance, an agreement strictly addressing quantitative allocation rights or strictly addressing sewage treatment. For instance, parties may mutually agree to exchange water supplies during different seasons. Many interstate compacts between U.S. state governments are of this sort.

Parties may also create linkages between different water issues, such as quantity and quality or hydropower and flood control. For example, Singapore and Malaysia linked water allocations to wastewater treatment in an arrangement in which Singapore imports wastewater from Malaysia, treats it, uses some for domestic consumption, and resells the rest back to Malaysia (Kolesnikov, 2002). In agreements between India and Nepal on the Mahakali River and between India and Bhutan on the Chukha hydropower project, allocation of water rights from hydropower were linked to shares of hydropower energy generated (Qaddumi, 2008).

The final category is linkage between water and non-water-related issues. For instance, in 1993 Turkey warned Syria that there would be no solution to water disputes between the nations unless Syria prevented the Kurdish separatists from acting within its territory (Güner, 1998). The agreement between Kazakhstan, the Kyrgyz Republic, Uzbekistan, and Tajikistan in the Syr Darya basin and Aral Sea links water rights with agreements on hydropower, gas, coal, and oil (Qaddumi, 2008). In order to facilitate the building of a highway, Italy and Switzerland, agreed on a policy package that involved an exchange of territory in return for diversion of a stream that had demarcated the border (The Economist, 2009).

Integrating geographical scale and policy scope

Integrating geographical scale and issue scope gives six broad linkage options, presented in Table 1. Increases in either geographic scale or in the scope of issues addressed serve to expand the choice set of available options, including the number of possible Pareto improving outcomes, and thus the number of potential policy packages. However, in both cases, increases will likely come at the expense of increasing the number of interested stakeholders, and therefore, can be expected to raise the transaction costs and political costs involved in reaching and implementing an agreement.

Table 1
Typology of water policy packages.

Scale/Issue Range	Single water issue	Multiple water issues	Water & non-water issues
Intrabasin	A1. Very limited choice set, Relatively low costs	A2. Moderate choice set, Moderate costs	A3. Large choice set, Potentially high costs
Interbasin	B1. Limited choice set, Relatively low costs	B2. Moderate choice set, Moderate costs	B3. Very large choice set, Potentially very high costs

This tradeoff between choice sets and costs or risks of linkage is represented in Table 1 and Fig. 1. In Fig. 1, choice sets are represented on the X-axis and potential payoff and costs of linkages are represented on the Y-axis. The curves are representative of either benefits or costs of issue linkage, both of which are expected to rise as the scope of issues included increases. The curve for interbasin linkages is presented as higher than that of intrabasin linkages for the comparable scope of issue linkage, reflecting the assumption that, *ceteris paribus*, increases in spatial scale will likely bring about higher political and transaction costs.

We assume that the objective function of each negotiating party is to maximize its net benefits by determining the choice variables of optimal geographical scale and scope of issues to link, given their respective costs. The relative rise in payoffs and costs as geographic scope or scale of issues increase is not known *a priori*. If transaction costs are low relative to potential benefits of increasing scale or scope, linkages of broader scale or scope can be expected. If, however, transaction costs or political risks from expanding the scale or scope of linkages outweigh the benefits, parties may eschew linkages or limit themselves to low cost linkage types, e.g., single issue intrabasin linkages.

In the next section we identify the actual use of the six types of linkages presented above in Arab–Israeli water relations. In so doing, we attempt to gain insight into the factors driving use of each type of linkage and into the perceived relative costs and benefits of the different types of linkages.

The case of Arab–Israeli water resources

Arab–Israeli negotiations over water are a useful case study because of the long history of water negotiations, the variability in political relations over time, and significant power asymmetries. Some information concerning the use of linkages has been provided anecdotally in academic studies and the press. Palestinian sources often claim that Israelis often link approval of water projects to political agendas, for instance, while Israelis tend to deny such claims (Jägerskog, 2007). In a clear case of linkage, a recent Mediterranean regional water agreement was not ratified because Israeli and Arab delegations refused to approve the other side's preferred wording describing the status of occupied Palestinian territories (BBC, 2010). No studies, however, have evaluated

this topic systematically, and thus, claims over who initiate such linkages and why they do so remain disputed.

This study evaluates the use of linkages and packages based on interviews, secondary sources, and reviews of actual negotiation protocols. Because much of the literature on Arab–Israeli water resources is from either an Israeli or Arab perspective, which can differ greatly, even over factual issues (Trottier, 1999; Jägerskog, 2007), analysis of official meeting protocols is especially valuable, as they are approved by both Israeli and Palestinian representatives. The case study of Arab–Israeli water relations is presented in three sub-sections. The first presents a brief overview of the quantities and distribution of water resources in the region. The following sub-sections evaluate Arab–Israeli water negotiations and policies within the framework of the typology presented above. The former examines the period up to and including the Arab–Israeli peace treaties. The latter evaluates the post-peace-treaty period, analyzing the protocols of the Israeli–Palestinian Joint Water Committee for the period 1995–2008.

Overview of the physical setting of water in the Arab–Israeli context

The Jordan River Basin contains the most significant source of shared water within the region (see Fig. 2). The headwaters of the Upper Jordan originate in Israel, Lebanon, and the Golan Heights. The basin supplies Israel with roughly 30% of its naturally renewable freshwater. The Lower Jordan flows south, forming a border between Jordan and Israel and later between Jordan and the West Bank; however, as a result of upstream water withdrawals and poor water quality, it is effectively unusable as a source of freshwater. The Yarmuk, a tributary of the Lower Jordan River that forms part of the border between Jordan and Syria, is the primary source of water for Jordan and serves as a supply source for southern Syria.

The Mountain Aquifer system, shared between Israel and the West Bank (see Fig. 2), is the other primary shared water source in the region. The Mountain Aquifer supplies nearly all the water consumed by Palestinians in the West Bank, and roughly 40% of Israel's naturally renewable freshwater. Another major aquifer system, the Coastal Aquifer, supplies Gaza and Israel with 100% and roughly 30% of their naturally renewable freshwater respectively. As there is relatively little physical interaction between the Israeli and Gazan portions of the Coastal Aquifer system, they are managed largely independently.

Israel, Jordan, and the Palestinian Territories all face chronic water scarcity (Falkenmark, 1989). Lebanon and Syria do not face chronic water scarcity, but do have local scarcity issues and periodic droughts. Scarcity of natural water supplies is likely to increase as the region is experiencing a downward long-term trend in precipitation combined with high rates of population increase (IWA, 2009).

In addition to natural water sources, Israel reuses roughly 70% of wastewater generated, providing 20–25% of overall national water consumption (Gabbay, 2008). In addition, Israel now also generates over 20% of freshwater supplies through desalination, and has plans to more than double desalination capacity by 2020. As of 2010, neither Jordan nor Palestine made wide-scale reuse of treated wastewater or desalination.

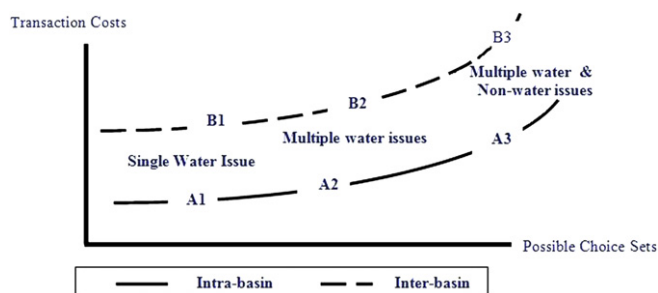


Fig. 1. Tradeoff between choice sets and costs of policy linkage.

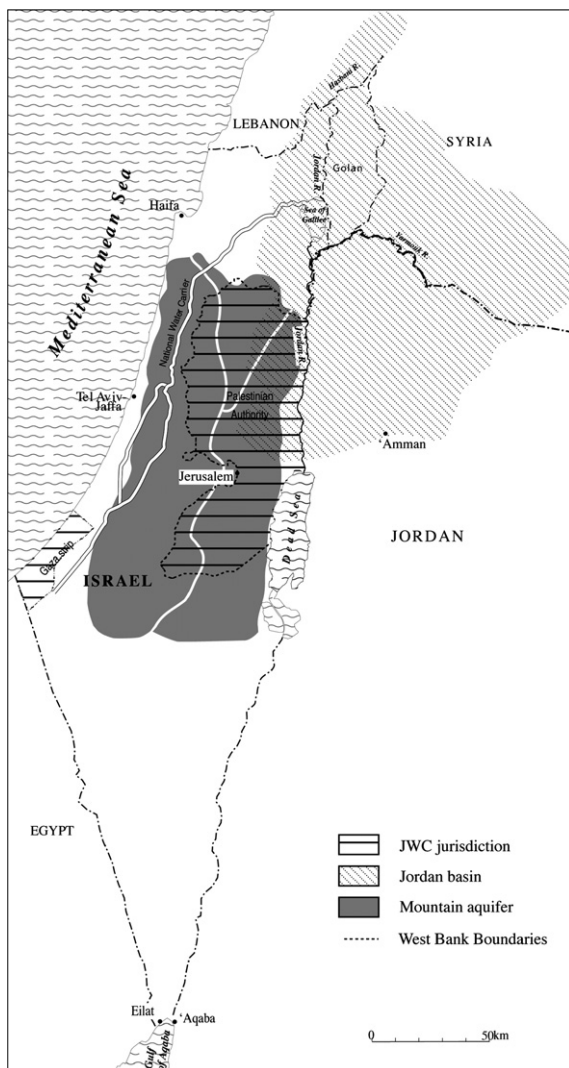


Fig. 2. Schematic map of the Jordan River Basin and the Mountain Aquifer.

Water linkages and packages in early Arab–Israeli relations

Indirect negotiations: 1948–1964

Following the creation of Israel in 1948, each country in the region developed its own national water plans independently. In the 1950s the United States sent a special ambassador, Eric Johnston, to mediate an agreement on distribution of the Jordan Basin's waters. In terms of the typology presented in Table 1, the Johnston negotiations initially were intended to be an A1 type of agreement (intrabasin, single issue) with bargaining limited to quantitative water rights within the Jordan Basin (Alatout, 2006).

The Israelis proposed including the Litani River in Lebanon in the calculations of total regional water availability, and based their water claims on projected water demand for all of Israel, not only the population within the Jordan Basin. Thus, Israel's response was a B2 (interbasin, multiple water issue linkages) package. The Arab states demanded limiting discussions to allocations of water to be used exclusively within the basin. Ostensibly, such a position was a return to an A1 type of arrangement; however, Arab motivations were also linked to broader political goals: preventing Israeli economic development, and thus, were an A3 (intrabasin, non-water linkages) strategy.

Israel later dropped its proposal for inclusion of the Litani and the Arabs dropped their demand that waters be used in the basin, and a compromise package was approved by the technical committees on both sides. Israel's motivations for accepting a more geographically limited package included the hope that an "accommodation over water might make it possible for Israel to negotiate with Lebanon for an exchange of power for water from the Litani River" (Stevens, 1965: 21) and a desire to see Palestinian refugees settled permanently in Arab states (Stevens, 1965). Thus, Israel desired B3 linkages between water and diplomatic acceptance. Jordan was also eager for an agreement in order to settle the Palestinian population within its new borders (Sutcliffe, 1973). However, for Syria and Lebanon, upstream riparians with access to other water supplies, the benefits of a water agreement were outweighed by the cost of political recognition of Israel (Wishart, 1990). Eventually the rejectionist policy linking water with political objectives prevailed in the Arab League and the plan was never ratified.

Water and violent conflict: 1964–1967

Following the breakdown of the Johnston negotiations, parties acted unilaterally to develop their own water projects. Israel planned a National Water Carrier (NWC) to divert waters from the Jordan River for use outside of the basin in its populated coastal plain and in the Negev desert. Syria and Lebanon began work on their own interbasin plan to divert the headwaters of the Upper Jordan in order to prevent Israel's NWC. Israel responded by bombing the diversion works (Sharon & Chanoff, 1989). The Palestine Liberation Organization (PLO) also attempted, unsuccessfully, to blow up Israel's NWC (Cooley, 1984). Thus, all parties engaged in B3 linkages, i.e., interbasin linkages between water and non-water (primarily security and sovereignty) issues.

In the 1967 war, Israel gained control over the water resources of the West Bank and the Golan Heights, and took over as upstream riparian in these basins. During this period, Israel linked water policy to security and economic development policies, restricting Palestinian access to the Mountain Aquifer and allowing only limited increases in water rights from their 1967 levels (A3 linkages) (Elmusa, 1993).

Despite lack of official diplomatic relations, Israelis and Jordanians met to discuss and regulate water sharing on the Yarmuk (Lowi, 1993). These meetings served to create familiarity and mutual trust between water experts on both sides (Shamir, 2003). Yet, as long as the regional conflict over territory and refugees was unresolved, talks were still subsumed by high politics (Lowi, 1993). Jordan's willingness to forgo the more drastic stage of linkage – abstaining from negotiations altogether, as Syria and Lebanon did – was due to its higher dependency on the shared resources.

Water negotiations and peace talks: 1991–1994

Beginning in 1991–1992, Israel entered into bilateral negotiations with both the PLO and Jordan and into multilateral negotiations with several Arab nations. Within the framework of the multilateral negotiations a separate working group for water was established as a way of both focusing expertise on water issues and delinking them from other issues (Shatner, 2005).

The bilateral talks between Israel and the PLO and Israel and Jordan resulted in peace treaties in 1993 and 1994 respectively, both of which contain sections specifically on water. They differ, however, in terms of the scale and scope of their water agreements. The Israeli-Palestinian agreement deals with multiple basins, the Mountain Aquifer and the Gaza portion of the Coastal Aquifer, however, there is no explicit reference to interbasin transfers or to tradeoffs between basin allocations. Water issues are dealt with in self-contained sections of the treaty, without linkages to other

issues; and there are no explicit linkages between different types of water issues. Thus, the treaty contains multiple A1 type linkages.

In contrast, the Israel–Jordan treaty contains both intrabasin water exchanges (A1 linkages) and interbasin exchanges of water rights (B1 linkages). In addition, according to a senior Jordanian negotiator, favorable terms for Jordan were a result of concessions by Israeli negotiators who were willing to sacrifice water rights in order to achieve a peace agreement (Haddadin, 2008). Thus, the treaty as a whole can be seen as a B3 type linkage in which water across basins was linked to a broader political agenda.

Table 2 summarizes major instances of policy linkages in Arab–Israeli water relations up until and including the peace treaties between Israel and Jordan and the PLO. Most of the linkages are B3 type linkages, with water linked to political objectives. From the failure of the Johnston negotiations until the peace treaties, linkages were exclusively negative, reflective of overall relations between the parties. All three instances of positive linkages were proposed policy packages. All other events were negative policy linkages initiated unilaterally.

Water policy in post-peace agreement era: The Joint Water Committee

This section offers a finer detailed analysis of actual negotiation protocols between Israelis and Palestinians during the period following the Israel–PLO agreement. The Joint Water Committee (JWC) was established within the framework of the agreement in order to coordinate water policy and management on shared water resources. It is composed of water professionals appointed by both governments. Within the JWC are also several subcommittees dedicated to specific topics such as sewage treatment and water pricing. The JWC is the primary forum for negotiations and decision-making on transboundary water policy.

A dataset consisting of the protocols of 61 meetings of the Committee and subcommittees that took place between 1995 and 2008 was evaluated for evidence of policy linkages and packages. The analysis was supplemented by a series of interviews with policymakers in order to understand the choice of linkages and packages found in the protocols. Of the 61 protocols reviewed, linkages or proposed linkages were found in 18, or just under 30% of the total, although such linkages were often not explicit. Two protocols, both from 1998, contained two linkages each, for a total of 20 linkages. As shown in Table 3, general JWC meetings had the highest percentage of linkages, but linkages were also found in at least some protocols of most subcommittees, despite their narrower mandates.

All but 8 of 61 protocols reviewed dealt with multiple issues, and eighteen included non-water issues such as security, sovereignty, and land-use. The majority of protocols addressed issues in more than one sub-basin. This can be seen in Table 4, which presents

Table 3
Protocols and linkages by forum.

Forum	Number of Protocols	Number of protocols with linkages	Linkages (%)
JWC	21	8	38.1%
Technical	18	5	27.8%
Sewage	13	3	23.1%
Pricing	3	1	33.3%
Special	4	1	25.0%
Other	2	0	0.0%
Total	61	18	29.5%

a breakdown of the issues discussed and the types of linkages per protocol according to the study's two-dimensional typology. The most striking conclusion is that no interbasin linkages (B1, B2, or B3) were made by either party, despite the fact that nearly two-thirds of the protocols dealt with issues in multiple basins or aquifers. Also notable is the fact that single issue linkages (A1 type) were rare (only two instances, or 10% of the total).

The number of meetings, and the number, likelihood, and type of linkages varied over time (Fig. 3). While it is difficult to draw conclusions about trends given the small dataset, it appears that the type of linkages changed around the outbreak of the intifada (Palestinian uprising) in 2000. Prior to 2000, linkages tended to be between different aspects of water management (A2); whereas after the outbreak of violence, linkages were primarily between water and non-water issues (A3), often related to security or sovereignty.

In terms of the actual linkages found, 16 (80%) were negative, i.e., involved some type of sanction or withholding of benefits for non-compliance, while 4 (20%) were positive, i.e., promoted some scenario that would improve both parties' positions vis-à-vis the status quo (Fig. 4). Israel initiated 13 out of the 20 linkages, 9 of which were negative. The Palestinian Authority (PA) initiated 4 of the 20 linkages, all of which were negative. For two negative linkages and one positive one, it was not possible to determine who initiated the linkage.

Both instances of A1 linkages were initiated by Israel, and both were negative. Five of the eight A2 linkages were initiated by Israel, one by the Palestinian Authority. Four were positive and four were negative, including the one Palestinian initiated linkage. All of the A3 linkages, those linking water and non-water issues, were negative. Eight were initiated by Israel and two by the Palestinian Authority. Examples include Israeli refusal to permit drilling or treatment facilities in areas deemed security concerns and Palestinian refusal to approve of permits for facilities that would serve Israeli settlements or jeopardize Palestinian claims to East Jerusalem. Table 5 presents a list of types of linkages found in the

Table 2
Summary of major instances of Arab–Israeli water policy linkages.

Type of Linkage	Event	Issues linked	Positive or negative linkage (initiator)
A1/B3	Johnston negotiations	Water supply & international acceptance of Israel	Positive (U.S), Positive (Israel), Positive (Arab states)
B3	Rejection of Johnston plan	Water supply & international acceptance of Israel	Negative (Arab states)
B3	Arab diversion attempt of Jordan headwaters	Water supply & economic development	Negative (Arab states)
B3	Israeli bombing of Syrian diversion attempt	Water supply & sovereignty, security, & economic development	Negative (Israel)
B3	PLO bombing attempt of NWC	Water supply & economic development	Negative (PLO)
A1	Israel–PLO peace treaty	Water supply and quality	Positive (Israel and PLO)
B3	Israel–Jordan peace treaty	Water supply & quality, boundary demarcation and political acceptance	Positive (Israel and Jordan)

Table 4
Issues discussed and linkages by type (% of total).

	A1	A2	A3	B1	B2	B3
Issues discussed (per protocol)	13.1%	18.0%	3.3%	21.3%	21.3%	23.0%
Linkages	10.0%	40.0%	50.0%	0%	0%	0%

protocols, along with a qualitative description of benefits and costs of such linkages for each side.

Protocols were analyzed in order to evaluate the effect of the number of participants in negotiations on the likelihood of linkages. Details on the number of participants in negotiations were available for 30 of the 61 protocols analyzed. Negotiations were asymmetric in terms of number of representatives participating. Israelis outnumbered Palestinians in 25 out of 30 of the meetings, while Palestinians outnumbered Israelis in only 2, with 3 meetings having an equal number of participants. On average 8 Israelis were present in each meeting versus just under 5 Palestinians. Israel had more than double the number Palestinian representatives at 13 of the 30 meetings. However, the number of participants did not differ greatly between protocols in which linkages were found and those in which they were not.³ Separate logit regressions, in which the presence of linkages was regressed on the number of Israeli participants, the number of total participants, and the ratio of participants, all failed to produce statistically significant relationships (Table 6). The same is true when only Israeli initiated or mutually initiated linkages were used as the dependent variable.

Some Palestinians had commented that project approval was easier during periods in which Labor was in power than when Likud or Kadima were in power (Jägerskog, 2007). There was a statistically significant difference in the likelihood of linkages depending on the party in power ($p < 0.04$) (Table 7).⁴ If one considers only the 14 protocols with linkages that were Israeli initiated or mutually initiated, the differences are even starker: none occurred during a Labor-led government, and only three during a Kadima-led one. The likelihood of linkages was positively correlated with the degree that the party was right-wing. During the pre-intifada period of the JWC, the left-center Labor party was in power, but was replaced by the right-wing Likud party with the outbreak of the intifada. Likud was replaced by the more centrist Kadima party following the intifada.

In contrast to the use of policy linkages, policy packages were uncommon between Israelis and Palestinians. Only three policy packages were discussed in the JWC. One, which came up in five

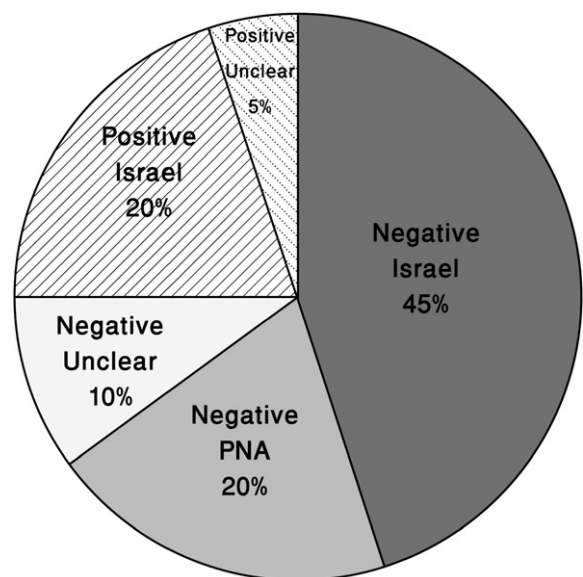


Fig. 4. Positive/negative linkages & linkage initiation.

different protocols, involved a deal in which Israel agreed to treat Palestinian sewage in exchange for Israeli rights to use the treated water (A2 linkage). Another involved Israel offering to share in the costs of relocating a sewage plant construction of which had already begun, but was stopped due to security concerns (A3 linkage). The third involved Palestinians agreeing to infrastructure for settlements on the condition that Palestinian villages would also be connected (A3 linkage).⁵ None represented the type of win–win solutions suggested in the theoretical literature as means of promoting consensus and cooperation, e.g., regional water markets.

Discussion

Factors affecting the benefits and costs of linkages

The review above demonstrates that policy linkage is indeed a common strategy in Arab–Israeli water negotiations, especially linkage between water and non-water issues. While both parties used linkage strategies, their objectives differed. Israeli linkages were often for security purposes, for environmental protection, or to improve economic efficiency. Palestinians linkages were primarily over sovereignty issues, and to some extent, for supply augmentation or wastewater treatment.

One factor influencing the use of linkages is, no doubt, the striking asymmetries between Israelis and Palestinians. Palestinians have the geographical advantage of being an upstream riparian on the Mountain Aquifer, however, Israelis have disproportionate military and economic advantages.⁶ That Israel more actively employed linkage strategies is consistent with Daoudy (2009), who found that downstream parties often use linkages tied to other power differentials to overcome upstream–downstream asymmetries. It is also consistent with those who maintain that basin-wide hegemony will use available methods to extend power advantages (e.g., Selby, 2003; Zeitoun & Warner, 2006).

Palestinians attempted to use linkages to leverage both their position as an upstream riparian whose actions impact the quantity and quality of water available to the other party, as well as their position as a conduit for third party funding. This is consistent with the finding that weaker or “more vulnerable

Percentage of Linkages Each Year

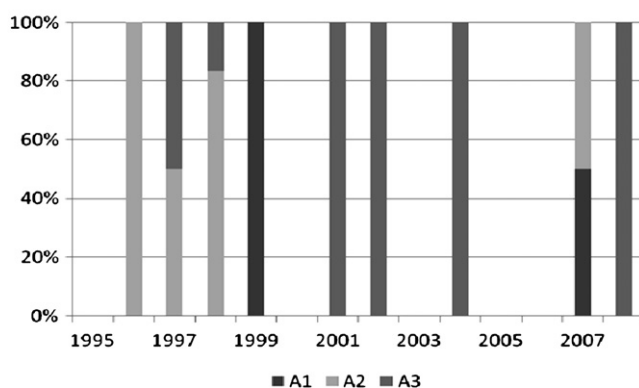


Fig. 3. JWC linkage types by year.

Table 5
Descriptions of linkages from JWC protocols.

Linkage Type	Linkage description	Benefits for Israel	Benefits for PA	Risks for Israel	Risks for PA
A1	Approval of water supplies for efficiency improvements	Less water loss	Additional supplies	Criticism for withholding supplies	Conflict with users and beneficiaries of illegally obtained water; May turn illegal water connections into symbol of resistance
A2	Water for wastewater treatment	Treated wastewater;	Additional supplies	Deviation from polluter pays; Aggravation of relations with donor community	Worse negotiation position for final agreements
A2	Water drilling permits for wastewater treatment	Less ecological damage	Additional supplies; Less ecological damage	Criticism for withholding supplies	Precedent that supplies are not unconditional right; Economic costs
A2	Water permits for monitoring and information exchange	Better informed management	Additional supplies or treatment	Criticism for withholding supplies or treatment	Precedent that supplies are not unconditional right; Perceived loss of sovereignty or independence
A2	Joint desalination and wastewater treatment projects	Economic efficiency; Additional supplies or treatment	Additional supplies or treatment	Worse negotiation position in final agreements	Continued interdependency; May be seen as collusion
A3	Water treatment for offset money	Treated wastewater; Additional supplies	Protect the Aquifer's water	Legal criticism; Ecological damage	High economic costs; Precedent that Israel can determine prices and treatment levels unilaterally; Loss of potential source of water
A3	Water supplies/treatment/equipment maintenance for security concerns	Improved security; More efficient supply and treatment	Additional water supplies	Criticism for conditioning supplies; Loss of donor funding	Difficulty enforcing; May be seen as collusion; May turn illegal water connections into symbol of resistance
A3	Denial of approval of sewage treatment facilities that would serve settlements		Maintain principle of territorial sovereignty	Lack of treatment for settlements; Ecological damage	Ecological damage; Reciprocal refusal of approval for projects by Israel

riparians can invert situations of power asymmetry by acting on the basin-dominant riparian's interests and thus reduce its alternatives" (Daoudy, 2009: 361).

The level of dependency on shared water resources, identified by several as a key criteria in water negotiations (e.g., Lowi, 1993), also appears to impact the willingness of parties to use linkage strategies. Lebanon and Syria's use of linkages during the Johnston negotiations, and Israel's disproportionate use of them in the JWC, may indicate that level of dependency on shared water is negatively correlated with propensity to use linkages, especially non-water linkages.

While both parties utilized linkages to their advantage, negotiators were aware of the potential costs of linkage strategies. In interviews, both Israeli and Palestinian negotiators claimed that they tried to refrain from linkages to non-water issues. While they maintained that this was primarily for reasons of professionalism, they admitted that they also feared spillover effects. A review of Israeli newspaper coverage of water relations indicates that Israeli and Palestinian policymakers considered linkages and packages that were far wider in scope and geographic scale than what they actually tabled for discussion in negotiations. For instance, several Israeli politicians suggested cutting off water deliveries to Palestinians until violence ceased, an option which was never actually proposed in negotiations nor implemented. Certain Palestinians suggested linking negotiations on West Bank and Gaza water supplies. That parties broached only more limited linkages in actual negotiations indicates that both sides actively vetted the types of linkages they officially proposed. Negotiators indicated in interviews that this vetting was done because they were aware of the potential costs of such linkages and wished to avoid retaliatory linkages or spillover effects on other issue areas (Bateh, 2009; Jarrar, 2009; Nagar, 2009).

In view of potential spillover costs, parties have, at times, taken active steps to limit linkages. For example, following the outbreak of the intifada, both Israelis and Palestinians signed an agreement committing not to make water supplies and infrastructure a target or instrument of war. Fear of spillover effects was the reason why the Israelis did not always condition water supply on wastewater treatment (Tal, 2007) and why the official position of Israel is the need to separate Israeli water, wastewater, and electricity infrastructure from that of the Palestinian Authority (Caesari, 2007). Given the negative effect of linkages on the negotiations, the Director of the Israeli Water Authority has set up a mechanism for fast-track approval of projects proposed to the JWC, in hopes of minimizing possibilities for linkages (Shani, 2009).

The temporal change in frequency and type of linkages utilized by parties indicates that their relative benefits and costs are not constant over time, and were affected by the broader political atmosphere. In terms of JWC protocols, A1 and A2 linkages were made only during years of relative calm in relations between parties. During the period of the intifada (2000–2005), in which broader relations were acutely conflictual, only A3 linkages were employed. This suggests that linkages limited in scope and scale may be used by parties pursuing conservative strategies, wishing to limit policy spillovers but still seeking some leverage; however, during periods in which trust is damaged and/or maintaining trust is not a goal, broader linkages may be expected. This supports the findings of several studies on transboundary resource management that highlight the importance of levels of trust as a critical variable in determining a country's negotiating position (e.g., Mostert, 1998; Susskind, 1994), the likelihood of the establishment of institutions, and the likelihood of subsequent cooperation (Duda, 1994; Ostrom, 1998). Although trust was not measured directly in this study, the conclusion that trust and negative linkages are inversely correlated is also consistent with the finding that the propensity to use

Table 6

Logit regressions of linkage on participation levels.

Explanatory Variable	Linkage		Israeli initiated linkage			
Constant	–0.500 (0.594)	–0.992(0.504)	–1.358 (0.087)	–1.054 (0.293)	–0.0435 (0.963)	–1.135 (0.135)
Number of Israeli Participants	0.011 (0.915)			0.026 (0.821)		
Total Number of Participants		–0.067 (0.576)			–0.029 (0.679)	
Israeli/Palestinian Ratio			0.459 (0.180)			0.137 (0.651)

Note: Numbers in parenthesis are p-values.

linkages is inversely related to the degree to which the ruling party was right-wing (this, given that the political affiliation of the party in power is itself a function of trust between the states).

Two-tiered costs and benefits

States are not unitary actors, but rather collections of interests, and state negotiators often play a dual game of satisfying both external and domestic audiences (Putnam, 1988). The impact of domestic pressure groups on transboundary water negotiations is well established (Zawahri & Gerlack, 2009). Representatives of domestic interest groups generally did not take part in JWC meetings, and thus, the full extent of their impact cannot be seen directly from a review of JWC protocols; however, some impact can be gleaned from interviews and from the eventual agreements reached. In Israel, border communities suffered from lack of Palestinian wastewater treatment and pushed for packages that would grant them access to Palestinian sewage. National level Israeli negotiators, including JWC members, discouraged such arrangements, as they increased interdependence and reduced pressure on Palestinians to treat waste at the source (Nagar, 2009). Local Israeli communities, especially farming communities, however, did not have to pay for the treatment and benefited by gaining use of treated wastewater and, thus, successfully advocated such deals. Similarly, the Israeli military or Civil Administration often initiated linkages in order to advance security concerns (Meital, 2007), even when such interests may have delayed mutually environmental outcomes such as wastewater treatment.

Within the Palestinian Authority, communities lacking water supplies or suffering from lack of sewage treatment represented important constituencies with immediate pressing needs. Palestinian officials in the JWC had to balance the need to improve services to the Palestinian population with national dictates limiting cooperation imposed by higher level government officials. Many joint wastewater infrastructures were perceived by local Palestinian communities as technically desirable, but were deemed politically undesirable at the national level (Jarrar, 2009; Trottier, 1999).

Linkages but not packages

Numerous possible packages have been proposed by various outside observers, including several interbasin packages. The most prominent involved B3 type linkages (e.g., water in exchange for

security arrangements). They offered potentially large benefits, but also involved high costs and risks. None have been implemented. Three possible explanations for paucity of packages are the limited expertise and limited mandates of water officials, limited options for low cost packages, and insecure water rights in ongoing negotiations.

According to JWC members, there are no explicit limitations on the scope of issues they could propose; however, all interviewees indicated that they considered the JWC a professional body that was best off restricting itself to issues within their field of expertise. Also, unlike linkages which may be unilaterally imposed, packages need to be mutually agreeable. This narrows the available options. Finally, it is well known that insecure property rights inhibit efficient bargaining (Coase, 1960). That Israel engaged in negotiation of broad policy packages with Jordan, but not with the Palestinian Authority, with which a final status agreement does not exist, may reflect the difference in the status of water rights. Such a result conforms with the observation that packages with side-payments are common in international water agreements, but uncommon in the subset of agreements that establish water allocations (Dinar, 2006).

The failure to adopt potentially win–win policy packages has been criticized by some who view such actions as irrational (e.g., Fisher, 2008). However, lack of adoption may simply reflect that a package may be “water rational” (i.e., one which makes sense in terms of the efficient management of water resources when evaluated in isolation), but not politically rational when evaluated in a broader context (Alam, 2002).

Linkage model revisited

Examination of this case study allows us to refine the basic model presented in Fig. 1. Fig. 1 shows a general relationship in which both potential benefits and costs increase as a function of both the scope of linkages and geographical scale. Tradeoffs dealing with only one aspect of water management offer limited room for maneuvering by parties, and thus they were used sparingly in this case study.

While both choice sets and costs increase as the scope or the geographical scale of linkages increase, they do not necessary do so in a linear or continuous manner. Such discontinuous leaps in terms of costs as scope increases are shown in Fig. 5a and b. The concave nature of the cost curves reflects the fact that even within a particular category of linkages, certain linkages have higher potential costs than others, and so, the benefits may outweigh costs for some and not others. Potential benefits also increase as a function of scope.⁷

While both choice-set size and costs increase with scale and scope, they do not necessarily do so at the same rate. Fig. 5a, for instance, shows a relatively steep increase in costs as linkages scope increases, while Fig. 5b shows a more moderate increase. The two graphs represent two different periods in water policy that were evident from the case study: prior to and following the outbreak of the intifada. In the early stages of negotiations, in which there was

Table 7

Linkage by Israeli political party.

Political Party	No. of Protocols	No. of Linkages	No. of Israeli or Mutually Initiated Linkages
Labor	11	1	0
Likud	23	12	11
Kadima	27	5	3
Total	61	18	14

Chi-squared = 6.66 ($p = 0.036$).

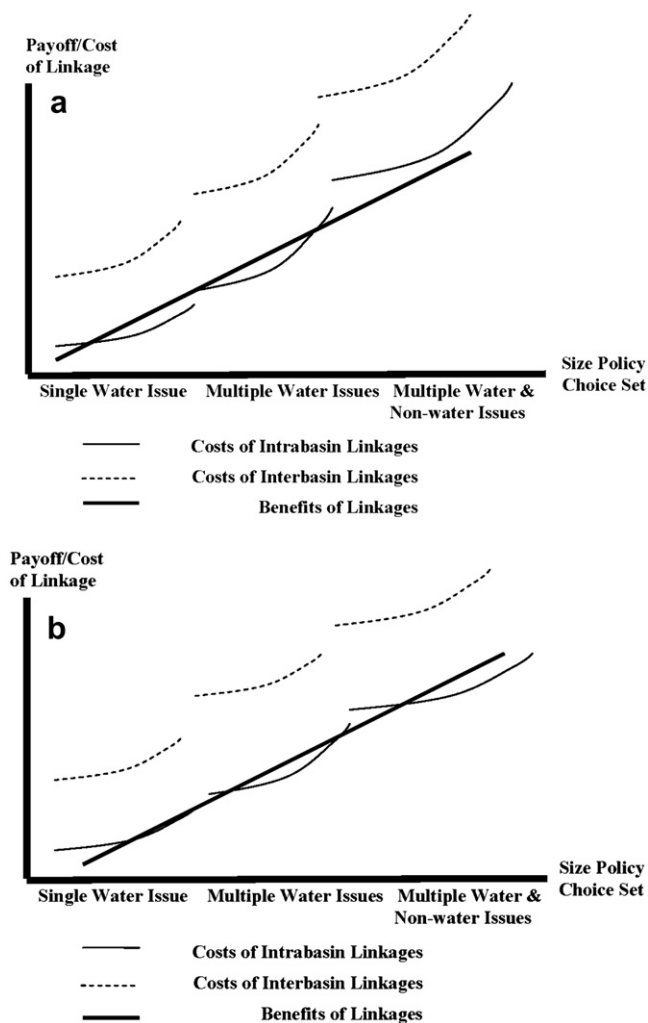


Fig. 5. (a). Tradeoff between benefits and costs of policy linkages (Pre-Intifada). (b). Tradeoff between benefits and costs of policy linkages (Post-Intifada).

at least a modicum of good will on both sides, the risks of upping the scope of linkage were high. Both sides attempted to treat water as a technical issue, and isolate water issues in order to limit the possibility for spillover into other policy spheres. Thus, the benefits of linkages were great enough to justify A1 and A2 type linkages, but not to risk A3 linkages (Fig. 5a). Following the outbreak of the intifada, however, the risks of imposing linkages to non-water issues were no longer as great. Good will and trust between the sides had dissipated, and the negative implications of political spillover were much lower, as cooperation in other areas of policy had already ceased in any case. As the political costs of such linkages decreased, the potential benefits outweighed the costs (Fig. 5b). This would explain the switch from A2 to A3 type linkages, as seen in Fig. 3.

Interbasin linkages appear to have particularly high costs. They proved a stumbling block in the Johnston negotiations and were not discussed in JWC negotiations. The lack of proposed or implemented interbasin linkages by the JWC, despite the fact that multiple basins were discussed in individual meetings, suggests that the costs of spatial linkages across basins were seen as outweighing any such benefits even during periods of violent conflict between the two sides. The sides may have feared that interbasin linkages would invite re-opening of already agreed upon basin management policies. In addition, interbasin linkages seemed to

command a high price for both parties in terms of sovereignty. For Israel, for instance, linking West Bank and Gaza water supplies threatened its territorial sovereignty, while for Palestinians, linking water issues in shared basins with basins wholly within Israel risked increasing its dependency on Israel and perhaps even losing its advantage as an upstream riparian (Bateh, 2009). In Fig. 5a and b, the costs of intrabasin linkages are shown as higher than the benefits in both periods.

Conclusions

Though there is ample literature on the theoretical benefits and risks of linkages in transboundary water negotiations, there is little empirical work exploring the circumstances under which linkages are implemented in practice. This is particularly true in areas of conflict, for which they have perhaps the largest potential impact. This study sought to shed light on the tension between the advantages and disadvantages of linkage strategies by examining their actual use in this context. It also sought to understand the rationale behind decisions to engage in or refrain from linkage strategies.

Given the limitations of a single case study approach, it is not possible to draw definitive conclusions as to states' motivations for using or abstaining from different types of linkages. Such motivations are likely to differ on a case by case basis, as are the relative benefits and costs for each party. Still, several interesting hypotheses can be offered and preliminary conclusions made. The case study confirms that states do actively link water policies to other issues in water negotiations, even when they claim otherwise. Parties appear to use linkages in order to leverage advantages they have in other policy spheres in order to counter disadvantages they have in terms of water management. Factors such as power asymmetry, level of dependence on shared water, and levels of trust appear to impact the probability of a state using a particular linkage strategy.

The party with more advantages in other fields may be more likely to be the initiator of linkages. Parties less dependent on the shared resources may be more likely to initiate broader linkages, even at the expense of progress on water issues. And, linkage policies both affected and were affected by levels of trust between the parties.

In the case study, limiting policy linkages to only one aspect of water management (A1 linkages) did not appear to expand the choice set enough to allow for many new beneficial policy opportunities. In countries with highly adversarial relations, during trust-building periods countries may attempt to explore linkage options by expanding the scope of issues to include a range of water-related issues (A2 linkages). Linkages between water and non-water issues (A3 linkages) offer a wide choice set of potentially Pareto improving measures, however, they also allow water issues to be held hostage to overall political progress and may induce spillover effects. Hence, during trust-building periods, countries may be hesitant to make use of such linkages. However, if periods of trust-building and cooperation collapse, the reservoir of good will disappears as well. At such periods the risks of broad linkages decline, and so the probability of wider scale and wider scope linkages may increase. Thus, it may be that water and non-water linkages can be expected when relations are either very good or very poor, as the political risks are often low for both. Among states with good relations they may bring about policy packages, which tend to be consensual, while in poor relations linkages may be more likely to involve negative sanctions imposed by one of the parties.

Initiating spatial linkages across basins (B1-B3 linkages) may imply even larger political costs than broad linkages across issues.

In the case study presented, while many interbasin linkages were proposed, they were only implemented in cases in which relations were stable and relatively good (e.g., the Israel–Jordan peace-treaty) or very bad (the Johnston negotiations and the violence following the failure of these negotiations). Reducing the cost of linkages by committing to being bounded to basin scale negotiations is consistent with the view of many water management practitioners that the basin is a useful reference point in defining regional hydrosecurity complexes (e.g., Turton, 2001). Thus, policymakers may wish to retreat from calls to expand the scale of water governance beyond the basin level (e.g., Feitelson & Fischhendler, 2009). However, restricting management to the basin scale can also be seen as a territorial trap, as it does not allow spatial linkages that may be required for overcoming upstream–downstream gridlock.

No conclusions can be made from this case study with regard to the proposition that increased numbers of negotiators results in increased likelihood of linkages. The party with the larger number of average participants did initiate more linkages, however, linkages did not occur more frequently in meetings with higher numbers of negotiators.

Developing a mutually acceptable set of policies in which the various tradeoffs are balanced between competing parties can entail a sustained, iterative negotiation process. Thus, policy packages are unlikely in situations of acute conflict. Rather than pursue potentially high payoff but high risk linkages or packages, as is often suggested in the literature, it seems that a more conservative low payoff, low risk strategy of de-linkage may be preferable in situations of intense conflict.

This study examined explicit linkages from statements of policymakers and reviews of historical documents and meeting protocols. A necessary limitation of the study is that it did not evaluate the effects of implicit linkages. For instance, from discussions with negotiators, it seems that linkages made outside the JWC may have prevented parties from proposing certain issues in face to face negotiations, however, no systematic evaluation of this effect was possible. Generalizability of results is limited by the fact that the case examined involved negotiating partners involved in a protracted conflict. Thus, results may be most appropriate for evaluating countries with highly adversarial relations.

In sum, linkage strategies are actively used by negotiating parties. They can be useful for both upstream and downstream parties, and both stronger and weaker parties. Each party can tailor the type of linkages to its specific objectives. Such strategies, however, are not costless. The benefits and costs of linkages are not static and must be evaluated within the current context of broader relations between the parties. Knowing these opportunities and limits of linkages is crucial for negotiators and policymakers that often are drawn to linkage strategies without considering their potential detrimental effects.

Endnotes

¹ For overviews of the water conflict and cooperation literature see: Wolf (2007) or Katz (2011).

² Consequently, some have suggested that it is harder to solve upstream–downstream issues than collective action water issues in which the riparians share the resource storage and hence, have less use for linkages in order to create reciprocal benefits (Marty, 2001).

³ The average number of Israelis in meetings with Israeli initiated linkages was 7.94, as opposed to 8.22 in those without linkages. The respective number for Palestinians was 5.0 and 4.3.

⁴ Based on a chi-squared test done on the values presented in Table 7. Lack of variation in Palestinian political parties during the period in question and a small number of Palestinian initiated linkages prevented similar analysis for the Palestinian side.

⁵ While ostensibly an A1 type linkage dealing with infrastructure for both sides, in reality the initial Palestinian objection to joint infrastructure was due to sovereignty

claims. Thus, a willingness to compromise on these claims for water infrastructure should be seen as an A3 linkage.

⁶ Israel's economic advantage is not only that it is the richer nation, but also in that it can unilaterally impact PA funding by utilizing the offset mechanism (Attili, 2008).

⁷ Benefits are represented in these figures as increasingly linearly for purposes of simplicity only. As in the case of costs, actual increases are also likely to be discontinuous and nonlinear.

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