The Politics of Unilateral Environmentalism: Wastewater Treatment along the Israeli-Palestinian Border

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bstract

he establishment of international environmental institutions assumes that cooperation is politically feasible and at sequential construction of the regime is viable through developing procedures for absorbing unexpected nocks. Yet the provision of many environmental services remains vulnerable to asymmetries in interests that mpede both cooperation and adaptation. Thus, the paper examines governance structures to internalize xternalities under asymmetrical conditions aggravated by variability in the background conditions**.** As a case udy, it scrutinises the strategies Israel has adopted to undertake river rehabilitation in response to continued noff of wastewater from Palestinian territories during periods of political turmoil. The findings show that when olitical changes are abrupt the foundations for employing cooperative solutions are undermined. In the case of rael, this has led the government to adopt a position of unilateral environmentalism. Unilateral nvironmentalism implies that instead of multilateralism, which is characterised by indivisible geographical unity, ciprocity and cooperation, it has chosen to take an approach of protecting themselves unilaterally from ansboundary spillovers. Yet, while safeguarding the country's political interests, unilateral environmentalism has umulative spatial implications that entail risks.

ntroduction: Cooperative adaptation

nvironmental services are often interpreted as services provided by economic agents to ensure environmental uality (Zilberman et al., 2006). Adequate wastewater treatment is, for example, a service that is meant to aintain the quality of the environment. However, the provision of domestic environmental services often takes ace against the globalization process that increases the interactions between social and physical systems (Young al., 2006). The result is often transboundary externalities and offsite effects that impede the provision of such rvices and hinder the efficient allocation of resources (Mitchell & Keilbach, 2001). The effect of the industrial ountries on the depletion of the ozone layer is one example for transboundary externalities.

such cases international environmental regimes are often built as a set of agreed-upon "rules of the game" that ill internalise externalities (Conca, 2006) and reduce the transaction costs associated with cooperation eohane, 1984). Indeed, we have witnessed in recent years a proliferation of such regimes to govern many ared and transboundary natural resources (Choucri, Sundgren & Haas, 1994). Of late, we have also seen the mployment of academic and policy-driven analysis that is dominated by the regime approach to solve problems rtaining to natural resources (Paavola, 2006; Vogler, 2003).

et, the establishment and implementation of regimes are problematic as they often face unforeseen physical riability such as climate change and rapid upstream water and land development. Unforeseen Variability can be so social. Political relations between states, for example, may abruptly change, potentially disfiguring tablished formal or informal regimes that may have previously existed. Environmental services may also be fluenced by instability in the global economy. This is often the case with water pollution and water supply that, spectively, are intertwined with the global economic system and the prices of global grain production (Hoekstra Hung, 2005). Political and economic variability may also be what O'Brien & Leichenko (2000) termed "double xposure," or how global political and economic changes interact simultaneously with climate risk to affect velihood and development opportunities.

hus, for environmental regimes, as a prerequisite for collective action, to cope with variability and uncertainty, daptive management regimes (Pahl-Wostl, 2006), often called cooperative adaptive management (hereafter cooperative adaptation"), are necessary (Jordan & O'Riordan, 1995, 1997). Adaptation stresses the need for exibility to achieve resiliency, which expresses the capacity of a system to absorb disturbance while undergoing hange so as to still retain sustainability (Walker et al., 2004; Young et al., 2006). Cooperative adaptation implies at instead of aiming to maintain a fixed management regime, the cooperative management rules may be flexible meet unexpected outcomes. The flexibility in cooperative adaptation is acquired through numerous echanisms often built into environmental regimes. These may include escape clauses to cover exceptional rcumstances when states are unable to comply with obligations due to unexpected shocks but still wish to aintain the regime (Koremenos, et al, 2001). Another way to address variability is to establish channels of ommunications between parties. This can be fostered in various ways, such as by establishing joint institutions, is often the case in transboundary waters (Feitelson & Haddad,1999), and by adopting ambiguity in treaty esign (Fischhendler, 2008).

ll these mechanisms assume that cooperation is indeed politically feasible and that international institutional olutions are Pareto improvements, leaving all sides better off. But what about situations in which there are rastic asymmetries in the benefits of cooperation, accompanied by periods of political variability? We now know at indeed many common pool resource and environmental problems, including global warming and acid rain, e examples of asymmetries in interests (Martin, 1993; Aggarwal and Dupont, 1999). Under these situations, operative adaptation may be untenable and alternatives must be sought. Thus, in contrast to the prevailing scourse on cooperative adaptation strategies to absorb physical variability, this study, through an analysis of the raeli-Palestinian case, examines a unilateral environmental approach to absorb asymmetrical interests ggravated by political variability**.**

he paper begins by identifying some of the criticisms of cooperative adaptation. Second, in order to broaden the cope of options available for adaptation it describes the Israeli-Palestinian case. The paper offers a chronological rvey of the development of Israel's policies to deal with Palestinian wastewater. It first lays out Israel's early tempts for river rehabilitation, characterised by neither cooperation with nor adaptation to the impacts of alestinian wastewater. These efforts were later replaced by cooperation with the Palestinians, but were not ccompanied by a "Plan B" adaptation option. Next, the paper analyzes the Israeli response to political variability the form of a sudden shift towards violent conflict. This response is characterised by a shift toward adaptation hile neglecting the channels of cooperation (**hereafter "unilateral environmentalism**)". Next, it presents a dimentary model for the choice of governance structure to address transboundary externalities. Finally, it ostulates regarding spatial implications of unilateral environmentalism.

he study is based upon an in-depth analysis of the implementation of the Israeli- Palestinian water agreements, hich constitute part of the interim peace treaty both sides concluded in 1995. Many of the protocols of the Joint Vater Committee (JWC), which was set up as the forum to discuss disagreements, were analyzed, as was much of e correspondence between the main Israeli players. In addition, personal interviews with the policy makers on e Israeli side were conducted. Due to the ongoing conflict, this paper does not directly incorporate Palestinian olicy makers' positions towards the Israeli unilateral strategy. Instead, its aim is to outline the motives that led rael to adopt a unilateral environmentalism approach and to postulate on its implications. Yet, it does bring as r as possible, the Palestinian voice through citing the academia and donor community response to Israel nilateral environmental policy and by examining the minutes of the JWC protocols, which reflect the both sides f the discussion.

he next section traces some of the barriers for cooperative adaptation and early signals for unilateral nvironmentalism.

ooperative adaptation reconsidered

oth cooperation and adaptation come with a high cost. The addition of parties has long been known to affect the rategic complexion of international negotiations. Sebenius (1983), for example, found that multilateral egotiations increase the transaction cost of reaching an agreement. This cost may further increase when some of e powerful parties wish to exploit their advantages in pursuit of their national interests (Kahler, 1992), or when ere is a high degree of distrust between the parties. Trust is essential for reducing the costs of monitoring, and nctioning might be required if individuals are not trustworthy (Cook et al., 2005). Seeking an agreement among ultiple partners in a trustless environment may create a race to the bottom in terms of environmental regulations. was further found that a greater number of parties reduced the effectiveness of the multilateral environmental greements already signed (Vogel, 1997). The cost of cooperation has often impeded environmental cooperation. some cases, compliance costs have resulted in the exclusion from agreements of many of the big polluters. US nilateral policy not to participate in many multilateral environmental agreements, the Kyoto Protocol and the aw of the Sea being two of the more prominent treaties, is an obvious example (DeSombre, 2004). This is why pson (1991) have advocated gradual regime formation that can build trust and allow treaties to evolve and ecome effective by making the rules more deeply entrenched over time. A realist perspective has caused some argue that there is often a false promise when international institutions get involved in peacemaking and the ursuit of stability (Mearsheimer, 1994). One example of this false promise is given by Gruber (2000) in his study n the gains and losses for the participants in the NAFTA regime. Gruber describes the architecture of this gime as a convenient way for the US and Canada to maintain their non-cooperative status quo (Gruber, 2000: 21). Another example is the study of Conca (2006, p. 375) which stressed the inability of the interstate regime pproach to effectively institutionalise a response to the cumulative damage to the world's water resources.

hen adaptation is inserted into the regime, the cost of building the regime may further increase. For example, schhendler (2006), in his study on the adaptation mechanisms in several water treaties, found that not only were any adaptation mechanisms excluded from the regime because of their high political cost but those that were

cluded increased the transaction cost of the entire regime. Indeed, many water regimes still lack many of the echanisms required for cooperative adaptation. For example, only half of the water agreements surveyed by amner and Wolf (1998) were identified as containing monitoring provisions and a conflict resolution echanism, both of which are essential for adaptation. This implies that there are barriers that impede rganizational adaptations; some may be inherent to the regime approach while others may be political or chnical. As for the former, Conca (2006: 53) argued that one of the foundations of the regime approach is their tribute of stabilizing knowledge. This is in contrast to an "open ended knowledge creation" (Levy et al., 1993) at is essential for adapting the regime to new background conditions in order to maintain the regime's fectiveness. This inherent limitation in the regime approach can explain the mixed success in building adaptive overnance regimes in the US to address water conflicts, as existing authorities are likely to resist the delegation f power to polices that their results are unpredictable (Scholz & Stiftel, 2005: 237). As for the latter barriers, a ystem that relies on massive water infrastructure is an example of a technical barrier that is less adjustable ecause of its high sunk-cost (Pahl-Wostl, 2005). Competition and power struggles between institutions are nother example of political constraint that was often found to block innovation at the individual level (Adger & elly, 1999). It was also found to slow a shift from the traditional governance style towards multiple ollaboration; which enables the social learning required for adaptation (Mostert et al., 2007).

he sub-optimum effectiveness of many multilateral and even global environmental programs and their difficulty adjust to new conditions suggests that the regime approach might have gone too far in terms of its focus on tionally negotiated agreements. Instead, it was suggested by scholars that parleying parties bypass the umbling institutional architecture of states and opt for an alternative scalar systems (Vogler, 2003). One is a upra-statism" system (Wapner, 1995), such as a Global Environmental Organization (Bauer & Biermann, 004). Yet, these calls are considered utopian given the lack of political will of many countries (Haas, 2004). ther experts have suggested moving away from environmental problems that fit the regime box most neatly Conca, 2006: 8). One example is the establishment of regional partnerships such as the Asia-Pacific climate pact replace the failed Kyoto Process (Kellow, 2006).

n alterative response has been the abandonment of cooperation, in favour of unilateral environmentalism. nilateral environmentalism implies that instead of multilateralism, which is characterised by indivisible eographical unity, reciprocity and cooperation (Caporaso, 1992), nations may consider creating barriers to rotect themselves unilaterally from transboundary spillover effects even at the price of using force against eighbouring states. While less than ideal for dealing with global or transboundary environmental problems, a nilateral approach can often be more manageable and enforceable from a political perspective. Thus, it may present a reasonable second best approach for countries in the presence of high negotiation, monitoring, or nforcement costs or other political, social, or economic constraints. Several examples for actions taken by states unilaterally protect themselves against harmful products exist in the trade and environment literature. For stance, the Danish bottle return law and the U.S. laws restricting tuna and shrimp imports based on production rocessing methods (see, for example, Pagh (1999), Brack (1995) or Katz and Jesdapipat (1997). Many of those nilateral approaches were chosen, despite the availability of multilateral frameworks, such as those provided by e European Union, the General Agreement on Tariffs and Trade (GATT), and the World Trade Organisation VTO). Other examples include the disappointment from the Kyoto protocol that raised the option of unilateral mission targets where individual countries set their emission standards regardless the lack or low standards set the regional and global agreements (Barrett, 2003. p. 367; Copeland and Taylor, 2005); Canada's unilateral rctic Anti Pollution legislation and policy that was set against the law of freedom of the seas when satisfactory ternational agreements had failed (Henkin, 1971); or the US's 'return to sender' policy vis-à-vis relegated astewater from the city of Tijuana on the Mexican side of their shared border (Fischhendler, 2007).

iven the mixed effectiveness of cooperative adaptation and some early signals for regime diversity and even nilateralism considerations, the next section examines Israeli river restoration policy as a means of nderstanding the conditions that can lead to the creation of unilateral environmentalism.

Wastewater treatment on the Israeli-Palestinian border

ttempts at river rehabilitation

ue to its arid climate, climate variability, and growing demand for water, by the early 1970s Israel had already ilised all of its water resources. Overexploitation coupled with large-scale water diversions and low nvironmental awareness drastically diminished the availability of water in many of Israel's streams that flow estward towards the Mediterranean coast (Gvirtzman, 2002). As of the mid-1980s only 50 percent of the water sed was treated (Arbeli-Almoslino, 1984). Flow in the streams was often largely composed of untreated astewater from the major population centers of both Israel and the West Bank, which has been under Israeli ontrol since 1967 (Bar-Or, 2000). The pollution was a result of weak law enforcement, low public awareness, nd a dearth of resources allocated to treat wastewater (Tal, 2002: 234). The pollution contaminated the Coastal quifer and some of the Mountain Aquifer groundwater (Gvirtzman, 2002), damaged ecological systems, and oon became a serious environmental nuisance.

he turning point in rectifying this situation was marked by several events: the transfer of responsibilities over ollution from the Israeli Water Commissioner to the newly formed Israeli Ministry of Environment (Ministry of e Environment, 1990: 218), the establishment of the River Restoration Administration as a coordinated body to store the damaged streams, and a initiative to build new wastewater plants nationwide and to upgrade existing nes (Bar-Or, 2000). This in turn led to initiatives to restore most of the Mediterranean coastal streams, including e Yarkon, Besor, Alexander and the Sorek (Kaplan 2004: 34, see Fig. 1). These initiatives often included esignating annual base flow and the development of water-based recreational facilities along each river. While e pollution sources in most cases often originate from Israeli settlements and Palestinian inhabitants in the West ank, all rehabilitation efforts were confined to Israel territory (Yafe, 2006) (see Figure 1).

gure 1 shows the major pollution sources and the basins with transboundary wastewater pollution.

rael has since devoted significant resources to address pollution in its own wastewater over the past 15 years. he Palestinian Authority in the West Bank has not reached similar results**.** Potential reasons for the lack of rotection of the Palestinians' water resources include Israel not enforcing the pollution standards in the West ank (Tal, 2002: 355-358), the Palestinians' weak economic and political capacity (Trottier, 1999) and political pposition on the part of the Palestinians to any infrastructure that would serve Israeli settlements (Isaac, ishmawi & Safar, 2004). The result has been that, as of 2004, around 60 million cubic meters a year of West ank sewage was discharged into the environment at 350 locations. Around 45 MCM were from Palestinian ources (Meir, 2004), with the other 15 MCM/y are from Israeli settlers living inside the West Bank. As a result, w sewage continues to flow downstream, impairing many Israeli attempts to rehabilitate the coastal streams al, 2002). The problem is especially acute in the transboundary streams – the Yarkon, Besor, Alexander and orek – that receive the wastewater of the Palestinian cities of Kalkilya, Hebron, Tulkarm and Bethlehem, spectively (see Figure 1).

hile Israel was dependent on the Palestinians regulating their wastewater, until the mid-1990s almost no ooperation was initiated between the two sides, nor were other measures taken to control the pollution.

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ooperation without adaptation

s wastewater was continuously running towards Jerusalem already in the late 1980s, the city of Jerusalem began egotiations with the nearby Palestinian cities of Bethlehem and Beit Jala for providing wastewater services. In 991, the three municipalities signed an agreement linking the sewage systems of the Palestinian cities to the

erusalem sewage network, with the German and Italian governments pledging to fund the connection Ashkenazy, 2004). However, since the agreement was based upon the personal close relations between the Mayor of Jerusalem and his counterpart in Bethlehem and the premise of more intense cooperation in the future, it d not include either monitoring and enforcement mechanisms or a conflict resolution option that might be quired in the future. Nor was the tariff for wastewater treatment determined by the agreement as it was assumed at the international donor community would fund the operation of the connection (Rubin, 2006).

ollowing the onset of the peace process in Madrid in 1991, water gained much attention. This was driven in part y widely publicised concerns that the increasing water scarcity in the region may ignite wars (i.e., Starr, 1991). Madrid, two parallel negotiating tracks – the bilateral and multilateral tracks – were established. The former ferred to direct negotiations between Israel and each of its immediate Arab neighbors. The latter focused on key sues that concern the entire Middle East and that might generate confidence-building measures (Peters, 1996). While the work on both tracks was progressing, Israel and the Palestinians initiated a secret negotiating track utside the framework of the Madrid conference that resulted in the Oslo I Accord, signed in September 1993. hat Accord, which announced the establishment of a Palestinian Interim Authority (PA), also noted the need for ooperation in the field of water. Subsequent to Oslo I, Israel and the Palestinians in September 1995 signed the slo II Interim Agreement, in which article 40 of Annex III addressed issues of water and sewage.

rticle 40 established a Joint Water Committee (JWC) to oversee the implementation of the agreement, with each de given veto power. It also established an enforcement arm, termed Joint Supervision and Enforcement Teams SETs), comprised of both Israelis and Palestinians. It also included an offset mechanism that allows Israel to educt Palestinian funds[1] pertaining to water provision from money held by Israel for the Palestinian side. To ddress economic variability, the protocol includes an annual review process and an adjustable water pricing rmula that reflects the changing cost of labor and electricity. The agreement and its subsequent institutions were erceived by both sides as interim, meant to last only several years until they would be replaced by permanent rangements. As such, the new regime almost did not include flexibility mechanisms to address future conditions cluding unforeseen political variability (Rizner, 2006). Both conflict resolution and sanction measures ggested by the Palestinians were rejected by the Israelis who were concerned about external intervention mpinging upon their hegemony. Israelis considered this limbo situation to their advantage as it maintained the xisting status quo (Kinarti, 2006). The water agreement was also accompanied by another agreement pertaining the environment that was implemented through a Joint Palestinian-Israeli Environmental Expert Committee EC) and a Coordination Committee on Environment. As in the two previous water agreements, it did not clude penalty tools and, as opposed to the latest water agreement, was rather deliberately ambiguous as the raeli negotiators insisted (Civil Administration, 1999).

oon after Oslo II was signed, the JWC, its technical subcommittees and the EEC started to meet regularly and scuss concurrently water and wastewater projects. Israel's interest was in promoting wastewater plants and habilitating the existing ones, especially where river rehabilitation projects had already begun or the risk of roundwater contamination was high. The Palestinians, on the other hand, prioritised expanding their access to eshwater. Initially, cooperation moved ahead satisfactorily as Israel approved new water supply initiatives for e Palestinians, and the Palestinians, in return, were willing to consider the construction of several wastewater ants adjacent to pollution hotspots. Two plants would treat the wastewater of Nablus and Tulkarm respectively ong the Alexander River and another would treat Hebron's wastewater along the Besor (JWC, 1998), see figure All three plants were to be funded by the donor community, which, between 1996 and 2002, allocated $260 illion solely for the treatment of sewage flowing in the streams (Nagar, 2004). Following the available donor nds and a severe pollution event on the Alexander River during 1996, a statement of cooperation was signed etween the bordering cities of Emek Hefer and Tulkarm that included plans for the construction of a regional ant (Brandeis, 2005). This agreement, not unlike its precursors, was an ambiguous document with no

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rocedures or duties for implementation. Israel further committed itself to contribute $7.5 million to advance everal priority wastewater projects among the Palestinians in the West Bank. One such project is the connection f the Palestinian city of Kalkilya to the Israeli wastewater plant in Nir Eliahu, which would reduce pollution in e Yarkon River, subject to the signing of an agreement concerning the payment of the PA for wastewater ervices (JWC, 2000). In accordance with the interim agreement, both sides also signed on 20 December, 1998 a rotocol relating to the supply of water from Israel to the PA.

able 1 describes the agreements signed and the cooperative adaptation mechanisms included and excluded from em. As shown from the table, in most agreements signed the cooperation was stripped of its adaptative omponent.

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olitical variability: The Intifada

wo years after the EEC was established, its operation become irregular (Brener, 1999) and it and the JWC began ccusing each other of violating the previous agreements. The Palestinians presented political and sovereignty-ased objections to the wastewater projects (Ministry of Defense, 1999) and refused an integrated system that ould connect Israeli settlements to the wastewater facilities discussed above. In the case of Tulkarm, the alestinians further refused to connect the planned Palestinian facility to its twin city, Emek Hefer, on the other de of the border (Bloom, 1999). Such joint ventures were perceived by the PA as, technically desirable but not olitically feasible (Brenner, 1998). Less wastewater integration implied a diminished economy of scale and perational flexibility required in cases of emergency (Ministry of Infrastructures, 2000). Instead, the PA argued at each side should solve its own problems. Israel, in return, conditioned the PA's access to hazardous materials nd the approval of Palestinian water projects on progress on the wastewater front (Eitan, 1998). Difficulties also ose on the water supply track as, already in 1999, the PA stopped paying for the Israeli water services and Israel return deducted its cost from the withheld tax returns. Two years earlier, the PA had stopped paying for astewater services to the city of Jerusalem (Shapira, 2001) and halted necessary maintenance work on the peline, which was by then leaking and in need of repair.

s shown, not only did the regime established not include adaptability mechanisms but its ability to evolve was rther restricted as it often was politicised and securitised by both sides. These difficulties in implementing the gime were exacerbated when the Palestinian-Israeli conflict escalated with the eruption of violence in eptember 2000 that caused considerable damage to the water and wastewater infrastructure in the West Bank. In e first six months of the second Intifada, there was no contact between both sides on water issues.

nce the outbreak of the second Intifada, the West Bank (as well as the Gaza Strip) has been a place of ontinuing armed hostilities. Interruptions to daily life took place in all Palestinian areas, to varying degrees. estrictions on movement of Palestinians were widely imposed by the Israeli Defense Forces (IDF) as a means f preventing Palestinian terrorist attacks against Israeli civilian population and military (OCHA, 2005). onsequently, the joint enforcement teams stopped operating (Ministry of Infrastructures, 2002). The Intifada so paralyzed all the progress made on the basis of the two previous agreements between the border cities of mek Hefer and Tulkarm and Kalkilya and Nir Eliahu (Ashkenazy, 2004). The Palestinian leadership, despite eir interest in ensuring the ongoing provision of water from Israel, could not take any action in the face of the olence (JWC, 2001a). When the JSETs stopped operating, Israel established its own enforcement teams, but eir mandate was restricted to monitoring only (Nagar, 2003).

he many barriers and the overall security situation also prevented wastewater construction teams, funded and perated by the donor community, from accessing sites and delayed movement of equipment necessary for the

onstruction of the WWTP (Driezin and Kawash, 2003). The donors demanded that Israel ensure that the ontractors would be able to carry their work (JTC, 2002). Germany specifically requested that Israeli military scort the German team in their operations. Israel did not accept the security as a valid reason for the delay of the nplementation of the projects (Nagar, 2002). Israel was willing to issue magnetic ID cards for Palestinians orking on sanitation projects in order to allow them access to construction sites, however, it was not wiling to rovide military escort (Herman, 2007). The German donors faced an estimated increase of 30% (vis-a-vis the osts calculated under peaceful conditions) caused by the Israel security measures, and since has stopped onstruction of several sites.

Vhile the general conflict was escalating, both Israeli and Palestinian leadership made a public commitment to eep water outside the fight and to make every effort to avoid damaging water and wastewater infrastructure JWC, 2001b). In practice, the plea did little, of course, to protect the water and wastewater infrastructure of the Vest Bank. Consequently, the JWC resumed its meetings while the other existing channels of communications mained paralyzed, including the EEC and the JSETs. Israeli attempts to resume wastewater treatment led to vo memorandums of understandings (MOU), one setting general criteria for wastewater treatment and the econd calling for the construction of the Hebron wastewater plant. Israel also encouraged commercial greements for wastewater treatment between border cities, hoping that downscaling cooperation to local tiers ight be able both to circumvent the impact of the Intifada and solve the cost-sharing problem (Ministry of efense, 2002). However, the Palestinians did not sign commercial agreements and delayed the signing of the ebron MOU (Kawash, 2003). Israel, in return delayed the implementation of 130 water projects, all with gnificant importance to them (Civil Administration, undated).

daptation without cooperation

raeli municipalities along border that were paying for the Palestinian wastewater treatment pressured the Israeli overnment to use the offset mechanism established in the water supply agreement on the wastewater front. The linister of Finance supported such a policy as it feared the burden of funding might fall upon it (Yamini, 2001). he death knell in terms of waiting for the resumption of cooperation came in the form of an appeal to the upreme Court from Arab settlements within Israel bordering the Hebron River. The Supreme Court firmly rdered the government to take the necessary measures to comprehensively solve the problem of transboundary astewater in the Hebron area, regardless of the political situation (Rubinstein, 2002).

he Supreme Court decision and the failure of the commercial contracts track resulted in a cabinet decision at the eginning of 2003 to extend the offset mechanisms to wastewater. The cabinet decision opened the door for pplications from all Israeli border cities for the reimbursement of their wastewater treatment cost from offset nding. Many of these applications were supported despite the Palestinian protest (Tzemach, 2005). The sudden vailability of funding paved the way for the construction of a new wastewater plant within Israel to treat the astewater of Hebron (Savit, 2006). Such a unilateral spatial solution, by using Israeli standards and technology, cilitated the restoration of the Besor River, which, it was assumed, would receive wastewater even if the donor ommunity were to build the facility next to Hebron (Ministry of the Environment, 2002). The offset funding also nabled Israel to upgrade emergency measures to be able to treat more water at better standards (Loebenstein, 006). Furthermore, the high level of wastewater treatment allowed the use of the treated water to irrigate nearby griculture lands in Israel, as indeed occurred on the Alexander and Yarkon Streams. Yet, the decision to shift to ore permanent, large and advanced plants implied the further use of the ineffective emergency measures until e plants were completed (Yaniv, 2004).

nce the victory of Hamas in the Palestinians territories in 2006, all formal communication channels with the alestinians have been stopped by the Israeli side, including the operation of the JWC (Nagar, 2006). The tuation is further aggravated since the donor community has stopped all funding to the PA for wastewater eatment, although some money is partially channeled via NGOs. Israel has since determined that waiting for

gional solutions will also delay solving the problem of wastewater from Israeli settlements. Thus, instead of esigning joint ventures to treat both Israeli settlements and nearby Palestinian villages, as it had originally esired, Israel started building a network of collection systems to serve only Israeli settlements in the West Bank.

overnance strategies to address transboundary externalities

everal modes of governance to control transboundary externalities were exposed by the case study. These can be onceptualised as consisting of two primary dimensions. The first represents the degree of cooperation adopted r coping with externalities. The second is the degree of adaptation incorporated in regimes in order to meet nexpected changes. To govern transboundary externalities, we can thus think of states as choosing strategies hich combine varying degrees of both cooperation and degree of adaptation. Figure 2 provides a conceptual amework for considering the cooperation/adaptation relationship, and the resulting quadrants can be used to utline 4 basic governance strategies (strategies A-D).

he figure is also used to illustrate the governance choices Israel has taken, each corresponding to a different patial scale of action. Phase I, consisting of early attempts to restore the coastal streams, focused on domestic habilitation measures that ignored all mitigation measures (strategy A - Fig. 2). In Phase II, Israel increasingly dvanced a strategy of cooperation, but without adaptation (strategy B – Fig. 2). Cooperation without adaptation as evidenced by the exclusion of contractual flexibility in its formal agreements with the Palestinians. It also nplied that the possibility of the regime to evolve and respond to new concerns and realities was restricted, since djusting the regime was repackaged as a security issue. The policy response of Israel following collapse of the hase II regime after the outbreak of the Intifadah was not a cooperative adaptation strategy (strategy C – Fig. 2) f, for instance, building joint wastewater plants on the Palestinian side, close to the source of the pollution. Such n approach is a preferred spatial strategy from both an environmental and economic perspective, but was deemed nworkable from a political and security one. Rather, in Phase III, Israel adopted an *ad hoc* spatial approach wards adaptation without cooperation (strategy D – Fig. 2). Under this policy of unilateral environmentalism, rael is now engaged in building permanent wastewater plants within Israel, funded by the offset money and esigned according to Israeli water standards and technologies.

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s long as the level of environmental hazard and the environmental vulnerability are low there is no need for overnance strategies to address these transboundary externalities. The environmental vulnerability is a function f the investments in environmental services, the fragility of the ecological system and the exposure to the xternalities. An increase in environmental vulnerability leads to a higher dependence of the party affected by the xternality as the extent and scope of externalities increase. A no-mitigation strategy (strategy A – Fig. 2) in this se is likely to result in pollution and in damage to the environmental restoration efforts. Indeed, Israel's greater omestic investments at the beginning of the 1990s in downstream river rehabilitation, along with an increase in astewater from the West Bank, dramatically increased the environmental vulnerability of the river systems, and us the costs to Israel of no mitigation. The relationship is presented in Figure 3 as the cost of no-mitigation CNM) curve. This is the monetary value of the likely damage caused by no-mitigation of the downstream or ownwind party. Consequently, as vulnerability increases there is a greater need for mitigation strategies.

ot all such strategies are equal in their ability to address pollution: the greater the degree of cooperation and daptation (strategy C – Fig. 2), the better they address extreme cases of environmental hazards environmental ulnerability. In this case study, the optimal environmental solution of cooperative adaptation implies the option f building joint infrastructure upstream adjacent to the source of pollution – in other words, building a astewater plant on the Palestinian side.

mitigation strategy is unlikely to be adopted before it is shown that the benefits of the mitigation exceed its osts, i.e., the upfront transaction costs associated with institutional change (represented by the height of the y-tercept in Figure 3). A do-nothing strategy of no cooperation or adaptation (strategy A – Fig. 2), involves no pfront costs but also produces no environmental benefits. A given strategy will likely be chosen only when the osts of not doing so are sufficiently high**.** In terms of Figure 3, an actor would be expected to adopt a given rategy only when its costs are exceeded by those of the CNM curve. Major factors that affect these costs are the ffects of the mitigation strategies on the vulnerability to political variability and on the power balance between e states. Since the spatial attributes of each mitigation strategy are often different, the governance strategy also ffers in terms of its transaction costs. The greater the degree of initial vulnerability, the higher the upfront costs eeded to address the situation. This explains the increase in slope for all of the strategies other than the do-othing strategy, which has constant zero upfront costs.

conflict areas where sovereignty and power balance are major concerns, as in this case study, it is reasonable to ssume that the costs of strategies demanding cooperation will outweigh those which do not. Adopting a ooperative adaptation option of building an integrated system on the Palestinian side, although optimal from an nvironmental perspective, would entail high political and security costs. A comparison of benefits and costs in e choice of the governance strategy can explain why Israel followed cooperation without the adaptation pproach (strategy B – Fig. 2). Progress in the regional peace process lowered the cost of cooperation. With ooperation possible, investments in river restoration increased, however, cooperative adaptation was too costly, s it would infringe on the sovereignty of both parties.

he benefit cost rationale also explains why, after the outbreak of the Intifada, Israel retreated from its ooperative efforts and shifted to the adaptation without cooperation strategy (strategy D – Fig. 2) as the cost of ooperative choices also drastically increases during political turmoil. Utilising a benefit cost analysis in the hoice of the governance strategy implies that during a conflict period, second-best environmental options are dopted since they are more resilient to political variability and, in cases of asymmetric power, unilateral pproaches tend to maintain the power balance in favor of the hegemonic partner. It also implies that in many ases mitigation will only be undertaken after the resource has already been damaged and the CNM curve rises harply.

s can be seen in Figure 3, when the costs of no mitigation are low, it is unlikely that countries will take action of ny sort. As the costs of inaction (represented by the CNM curve) rise, it becomes worthwhile to adopt some sort f response strategy. A strategy of adaptation without cooperation is likely in cases in which the costs of ooperation, either in political or economic terms, are significant. Similarly, a strategy of cooperation without daptation is a likely response under conditions of low barriers to cooperation, but high costs for adaptation such s renegotiation of agreements or redesign of infrastructure.

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an unilateral environmentalism be sustained?

he adoption of unilateral environmentalism necessitates examining whether unilateral adaptation is indeed a patially viable option. The short time span of this approach in the present case study does not allow for a full-edged examination of this question. Yet, it does enable us to consider some of its advantages and disadvantages ee Table 2).

nilateral environmentalism is a spatial option that is associated with end-of-pipe solutions on the other side of e border as treatment at the source requires cooperation. Clearly, this option exposes the resource or

nvironmental services to pollution and may also create opposition at home for nearby environmental nuisances. his was the case with transporting Hebron wastewater to the already-existing plant next to Beersheba, on the raeli side, that was rejected by the municipalities bordering the infrastructure. Yet, an end-of-pipe solution is early more resilient to political variability since it is beyond the operational and managerial influence of the her side. In the case study examined, it also gave access to reclaimed water, as returning reclaimed water to the nder is often not a viable economic option.

nce it is not likely that under non-cooperative conditions the polluter will share the cost of pollution, unilateral nvironmentalism also implies the adoption of cost-sharing options other than the polluter pays principle (PPP). eviation from the PPP encourages subsidies to compensate those producers who take the burden of the daptation measures to externalities (Cremer & Gahvari, 2005). It also encourages free riders to pollute as the urden is put upon others rather than those who pollute. Yet, the case of the US paying the majority of the cost of eating the Mexican wastewater from the city of Tijuana demonstrates the ability of other cost-sharing principles better accommodate economic and political asymmetries than the PPP – and, thus, to provide more effective eatment than the PPP might permit (Fischhendler, 2007).

rael, to sustain the adverse effect of deviation from the PPP, imposes the cost on the Palestinians by using the ffset mechanism and thereby implicitly imposed the PPP on the Palestinians. Yet, coercion and negative side ayments obviously damage trust, the centerpiece of cooperative management (Beeson & Higgott, 2005). This so exacerbates international tension and is viewed as an imperial act that invites retaliation. Furthermore, the ffset mechanism can only function as long as occupation continues. It would not be possible if the Palestinians ecame an independent state following a full fledged peace treaty with Israel. Not surprisingly, then, linking rogress in wastewater treatment to water supply, an issue so politically contentious, seems to paralyze the peration of the JWC (Bloom, 2006). Other unilateral acts taken by Israel vis-à-vis the Palestinians, such as the eparation Wall, were also found to weaken the Palestinians' institutional development and their access to vital atural resources (Trottier, 2007).

nilateralism, as opposed to comprehensive joint integration, also implies a separation of infrastructure. Less patial integration diminishes economies of scale. In this case study it also means that each side will develop his ater resources individually. Yet, given the asymmetries in capacities and power between the two sides Israel is uilding its own desalinisation plants and wastewater facilities. However, transboundary integration also means a gh potential for disagreement, high transaction costs and infringement on sovereignty (Feitelson, 2003). The gh costs of integration explain, for instance, why Integrated Water Resource Management, though widely ndorsed by international organizations, NGOs and scientists, has only rarely been implemented (Biswas, 2004).

nally, unilateralism also entails a lack of environmental standardization across borders. In this case study, a ownstream party with higher standards becomes exposed to the externalities, while the upstream party does not et his standards of living improved. It means a perpetuating the inequities to access to water and sanitation etween both sides and as a result further contamination of the joint water resources. The detrimental result of it already noticeable in Gaza as 30 million cubic meters of wastewater is now seeping back into the groundwater ausing humanitarian health crisis (Bateh, 2007). However, as the process of bargaining for uniform standards an take years, each adopts its own standards to allow for the construction of wastewater plants, with the option of pgrading them if agreements are later reached.

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onclusions

ooperative adaptation has become a fashionable concept that has been prescribed for many of the transboundary nvironmental problems facing uncertainty and globalization including climate change and biosphere protection .g. Möllenkamp, et al 2007; Cots, et al 2007; Pahl-Wostl, 2006; *Olsson, 2007*). In water/land interaction this ption has a distinct spatial form of action that includes setting joint managerial jurisdictions that exercise fluence over upstream and downstream segments of the basin. Yet, this study has indicated that for this option work as an effective form of governance several presumptions must be met. Cooperative adaptation requires me degree of political and economic stability among all partners for building working relations and, in the case developing countries, for the donor community to operate. It also assumes that all agreements are adjustable nd that sequential construction of the regime is viable through developing procedures for absorbing unexpected ocks. Finally, it assumes a low security cost that the different sides can meet frequently and built border nvironmental infrastructure. However, when the relations between neighboring countries are asymmetrical, olitical changes may not allow meeting these conditions for cooperative adaptation.

this case study, it was the asymmetries between the two sides in terms of power, institutional and economic apacity, and geography (upstream versus downstream), aggravated by a sudden shock (the Intifada) that anged the climate from cooperative to non-cooperative**.** The result was that, a seemingly non-political issue, ch as wastewater, has become politicised. In the wake of high political and security barriers to cooperation, but latively high costs in terms of ongoing damage to the ecosystem and future water supplies, Israel retreated from cooperative adaptation approach, to adaptation without cooperation (unilateral environmentalism). Thus, has dopted a spatial option of environmental separation whereas Israel is now engaged in building unilateral astewater infrastructure within Israel, funded by the offset money and designed according to Israeli water andards and technologies. Unilateral environmentalism has addressed two types of uncertainties that endanger e reliability of the provision of environmental services. One is uncertainty regarding the future political nvironment and the second is uncertainty concerning the level and reliability of the treatment provided by the her party or parties.

nce many transfrontier environmental problems have to be solved under multiple uncertainties and symmetrical relations between states (O'Riordan & Jordan, 1995; Miles et al, 2002) a unilateral nvironmentalism reaction that allows one nation to restore its environment while being resilient to uncertainties nd asymmetries in interests makes unilateral environmentalism a possible spatial option. It can also ensure aintenance of the power balance and can reduce the transaction costs associated with cooperatives games. This ay explain why today we are witnessing a rising tide of unilateralism worldwide (Carter, 2003; Bannon, 2006), nd green unilateralism in particular (Biermann, 2001). Such a situation may lead to a fortress world where ubbles of privileged people can internalize externalities in face of breakdown of international institutions Raskin, et al 2002).

While the traditional debate on unilateralism was often in the context of states exploiting their sovereign right to xploit natural resources, regardless of offsite effects, this case points towards a different discourse of nilateralism: unilateralism that aims at protecting against externalities rather than creating new ones. This, ccording to hegemonic stability theory, can be either being provided in a benign or a coercive manner (Keohane, 980; Glipin, 1981). Under the benign approach the hegemon provides the public good by itself as its benefits om the public good exceeds the costs. Under the coercive approach the hegemon imposes a tax on the other roup member to provide the good. This implies that there are two unilateral strategies, one of which might be ore suitable than the other. Thus, it is not necessarily unilateral environmentalism per se that is unlikely to be ustainable, but its coercive version, such as in the case of Israel's adoption of an end of pipe solution financed by e off-set mechanism. Surly, this coercive version is possible as long as the asymmetrical power status quo is aintained, as long as property rights are not well defined, and as long as the transactions costs are sufficiently gh so as not to offer a Coasean type solution of cooperatively internalizing unidirectional negative externalities rough side payments or monetary exchange.

ot surprisingly it was also found that the spatial attributes of unilateral environmentalism, despite short-term olitical and environmental advantages, brings with it the risk of high environmental costs and potential ounterproductivity. In other words, the corrosive unilateral environmentalism seems not to translate either to gional stability or to beneficial outcomes for all parties as the benefits of wastewater treatment are not equally stributed.

he above conclusion underscores the need for studies in basins with dissimilar conditions so as to understand hether unilateral environmentalism is not indeed a double-edged sword, as it can have negative cumulative ffects. If this is indeed the case, such unilateralism entails responsibilities as well as rights: it entails the need to ok for alternative institutional forms of adaptation that reconcile conflicts between multilateralism and ilateralism; it also entails the need to forge a compromise between the weak and the strong parties in order to tain amicable solutions. In other words, there is a need to accommodate and develop institutional diversity that n balance between the many participants in a regime.

the environmental literature political relations were often taken as a constant while variability was attributed to e physical dimension of the system. The concepts of adaptability, vulnerability, and resilience are often scussed in relation to climate change. However, the study findings stress the importance of acknowledging olitical variability as a variable in affecting environmental regime performance and thus the adaptive capacity to bsorb these changes. Since climate variability poses different challenges than does political variability, the uestion is how to build institutions that will be able to address both concerns. This issue is relevant since it is ssumed that in a "globalised" world social and environmental change will more frequently interact with each her (Young et al., 2006). The question that still remains concerns the type of adaptability to be adopted.

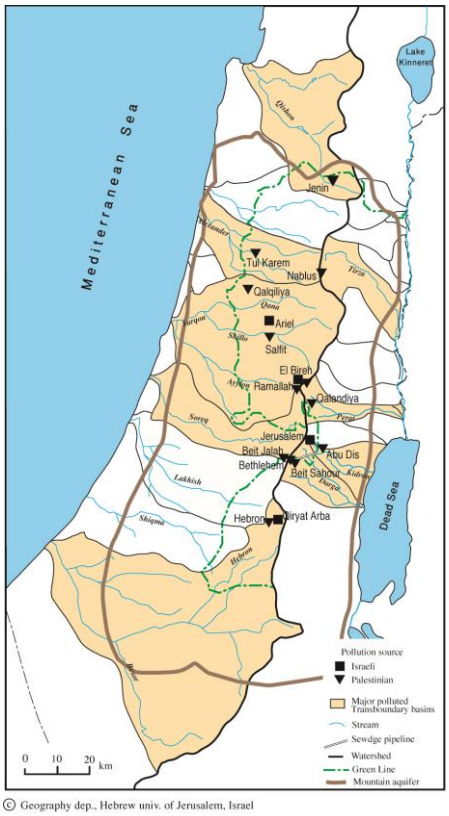

Figure 1: Major pollution sources and polluted transboundary basins

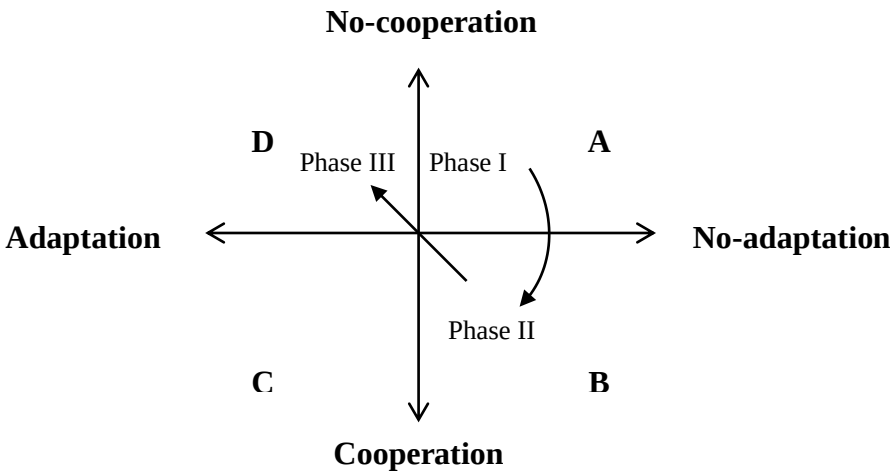

Figure 2: Governance strategies to address transboundary externalities

* The quadrants, labelled A-D, mark possible governance strategies
* Phases I-III indicated the governance strategies Israel actually implemented

A generic model for the choice of the governance strategy

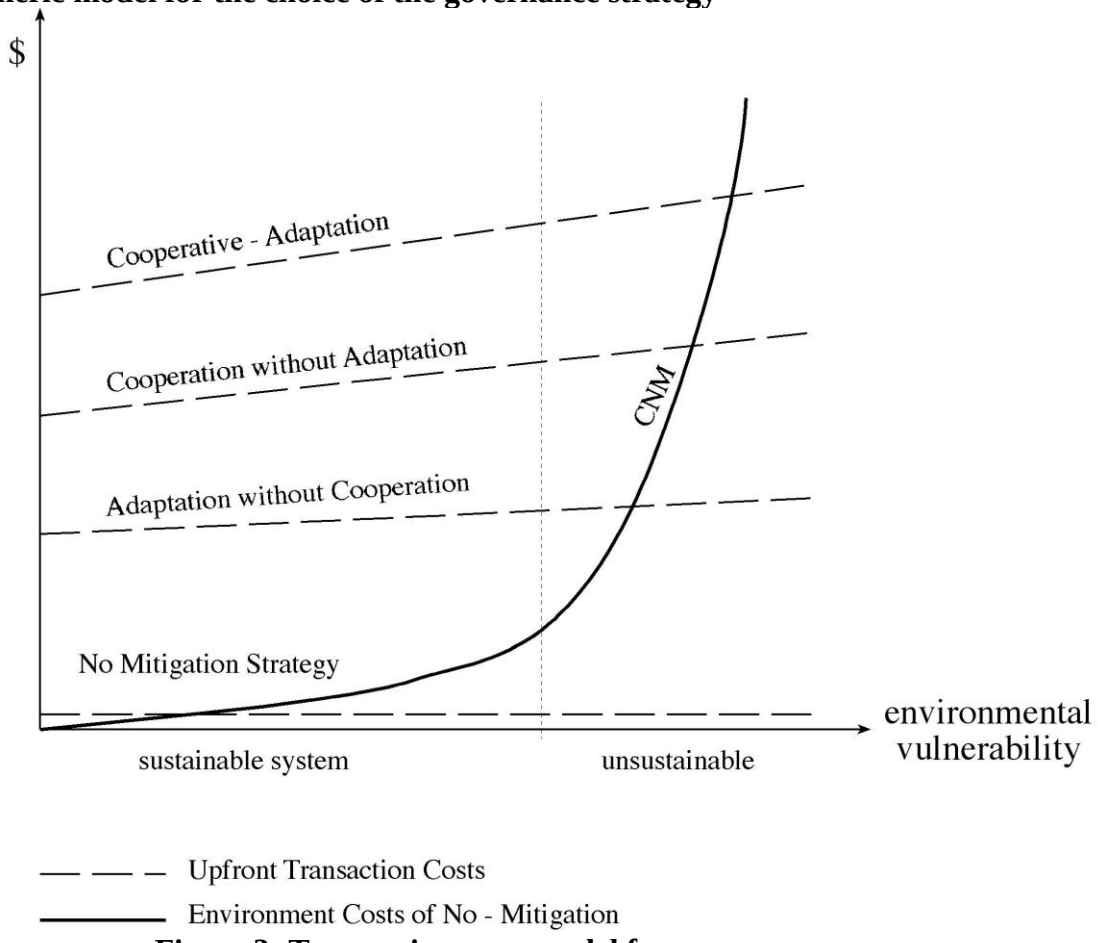

Figure 3: Transaction costs model for governance strategy

Mechanisms available	**Agreements signed**				
	Oslo Accords	Emek Hefer-Tulkarm	Jerusalem-Bethlehem and Beit Jala	Kalkilya-Nir Eliahu	Water supply protocol
Conflict resolution	-	-	-	-	-
Joint institution	+	-	-	-	+
Ambiguity	+	+	+	+	-
Escape clauses	-	-	-	-	-
Tariff updating		-	+	-	+
Enforcement mechanism	-	-	-	-	+ (offset)
Funding mechanism	-	-	-	-	-

Table 1: Mechanisms to address variability in agreements pertaining to transboundary wastewater and water

"+" marks a mechanism included in an agreement
"-" marks a mechanism not included in an agreement

Facets of unilateral environmentalism	**Advantages**	**Disadvantages**
End-of-pipe solution	- Provides political resiliency - Provides reclaimed water	- Exposure to groundwater pollution - Creates environmental opposition at home
Deviation from polluter pays principle	Addresses political and economic asymmetries	Opportunity to free ride
Offset mechanism	Reduces motivation to pollute	- Damages trust - Exacerbates international tension - Built upon unstable funding source
Separation of infrastructure	- Enhances political resiliency - Reduces cooperation costs	No economy of scale
Lack of standardization	- Expediates construction of wastewater plants	Exposure to groundwater pollution

Table 2: Advantages and disadvantages of unilateral environmentalism in conflict areas

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