# INTERNATIONAL WATER LAW AND IMPLICATIONS FOR COOPERATIVE ISRAELI-PALESTINIAN TRANSBOUNDARY WATER MANAGEMENT

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**Abstract:** Inasmuch as the interim agreements between Israel and its neighbors regarding water management are now over 10 years old, it is well to consider their efficacy and adequacy in light of the ongoing evolution of international cooperation in water management. After surveying basic principles of international water law the agreements signed between Israel and its neighbors during the 1990s, cooperative water management is reviewed and contrasted with four cases of international water agreements from around the world. The peace accords provide a surprisingly strong initial normative framework. Yet, there are several areas of cooperation that the next round of negotiations might consider to enhance the institutional and substantive effectiveness of water accords as a basis for ameliorating conflict and ensuring the sustainability of water management in the region.

**Keywords:** water management; international law

## 1. Introduction – International Environmental Agreements – Potential and Limitations

Over 500 international environmental conventions currently help to regulate the global commons. Some 80% of these have been ratified since 1972; the vast majority are regional in nature. Among the achievements that can be attributed to international environmental law are:

- A 90% drop in CFC production (US EPA, 2001)
- A precipitous decline in whale take from 66,000 (1961) to 1,500



*C. Lipchin et al. (eds.), Integrated Water Resources Management and Security in the Middle East*, 213–236.

- The return of severally previously endangered species (e.g. elephants) (Christie, 1993)
- A reduction in air pollution concentrations in Europe and North America

The management of transboundary water resources is a particularly critical area of modern international environmental law. If agreements concerning travel and transport are included, the number of hydrologically related international agreements is even more staggering: 3,600 international treaties relating to water resources have been drafted during the last 1,200 years (Birnie, 2002). Since 1814, some 600 conventions deal with non-navigational aspects of water management (Kiss, 2000). The ability of so many nations to agree on cooperative frameworks for water management suggests that water is indeed a greater force for agreement than conflict. Not only do international agreements reduce the tensions associated with competing claims in transboundary watersheds, but in the environmental sphere, international law often serves to leverage national initiatives to reduce polluting activities and create sustainable policies for water management.

Like all international conventions, international environmental agreements regarding water resources are subject to the basic norms set forth in Vienna Convention on the Law of Treaties (1969). No less important for their successful implementation are the practical dynamics of international relations that tend to effect agreements addressing transboundary natural resource problems (Palmer, 1992). These include:

- The need to reach a consensus position in negotiations and the generic (and often vapid) framework agreements that serve as an initial basis for international cooperation.
- Frequently the specificity of the agreement is enhanced through subsequent protocols and annexes.
- Oversight of conventions is usually conducted via periodic conference of the parties and a secretariat, whose budgets and mandate are typically inadequate for the task of expediting compliance among parties to the convention.
- Domestic ratification often lags behind the actual commitments made at the time of the signing of the convention.
- Compliance is based on trust and the principal of *Pacta Sunt Servanda* (good faith in meeting state commitments) although reporting procedures often serve as a valuable tool for prodding nations to take action. Adjudication between sides for violation or noncompliance, in any event is exceedingly rare.

- The creation of a scientific advisory framework often offers a mechanism for overcoming political disagreements and for maintaining the technical integrity of the agreement as new data and understanding emerge.

Concerns about the efficacy of international environmental agreements generally focus on the difficulty associated with enforcing them. Formal adjudication requires the consent of parties to the agreement. Even then, an aggrieved party must muster the political will to prosecute. Several international environmental agreements do contain trade sanctions for noncomplying parties. For example, the Convention on International Trade in Endangered Species of Wild Fauna and Flora of 1973 (CITES) creates a mechanism for suspending wildlife trade with countries who are out of compliance with treaty's terms. Such sanctions have indeed been invoked against China, Italy, Greece, and Thailand (Tierney, 1998). More common than the use of a stick involves the "carrot" associated with international assistance from agencies like the Global Environmental Facility (GEF) that can be selectively withheld from bad actors (GEF, 2006).

An evaluation of different international agreements designed to regulate transboundary watersheds, should also be mindful of the broader normative framework of international law which facilitates cooperation and expedites agreement. Article 3 of the *Statute of the International Court of Justice* in The Hague defines a hierarchy of legal sources that define the substantive rules and principles of international law (Shaw, 2003). Ranked from top to bottom, these include:

- International conventions (agreements between nations)
- Customary laws governing international activity
- General principles of Domestic Law
- Judicial decisions by international courts and arbitration boards
- Resolutions or the "Soft Law" where general principles are proclaimed in resolutions by international bodies or at gatherings.

In the context of transboundary water resources, there is a clear evolution in the substantive orientation of international law as reflected in the above sources (Blatter, 2000). Prior to the 1972 Stockholm Convention on the Human Environment, the primary emphasis that emerged from natural resource treaties and their adjudication was the protection of state sovereignty. From the regulation of seal hunting to ensuring the free travel and commerce in international waters, protecting the global commons was considered less important than ensuring that countries enjoyed unfettered use of their own resources, unlimited by their neighbors' interests and concerns (Tal, 2006).

All this has changed with the advent of modern international environmental law. Treaties seeking to protect the ozone layer, reduce international trafficking

of hazardous substances or protect species unabashedly dictate domestic national policies (Birnie, 2002). In the water realm, limitations on state activities go beyond the contractual sphere of multilateral conventions. Several decades of agreements and the steady integration of legal doctrines have established a series of general precepts that today can be perceived as enjoying the status of "customary law", creating a context for the formulation of new agreements, as well as their subsequent implementation (Eckstein, 1995).

## 2. Basic Principles of Water Law

The most fundamental question that traditionally arises in international water law discourse involves sovereignty – or put simply: "Who enjoys rights to the water?" Traditionally there have been competing perspectives on what constitutes the binding *customary*, international legal principles. The myriad substantive positions espoused not so coincidentally, tend to be consistent with the particular national interests of the advocate.

On one extreme is the position of *Riparian Rights* that holds that water rights should be assigned on the basis land ownership along a stream. This position is often referred to as the *Harmon Doctrine* after the somewhat bellicose US Attorney-General who waxed enthusiastic when asked to advise his government regarding its conflicts with Mexico over water rights. According to this perspective, water rightfully can be used by those upstream who have access to it. In 1895 Judson Harmon posited that: "The fundamental principle of international law is the absolute sovereignty of every nation as against all others, within its own territory... all exceptions, therefore, to the full and complete power of a nation within its own territories must be traced up to the consent of the nation itself." Turkey and other nations that sit "upstream" conveniently agree that their past willingness to allow water to flow to downstream riparians in no way implies that they are enjoined from utilizing these sources in the future (Eckstein, 1995).

On the opposite extreme is the position of *Historical Rights* or *Natural Flow.* This stance holds that if a party or individual has enjoyed access to water which flowed into an area under her control, she is fully entitled to continue to receive this water. Historic use essentially creates a property right. Accordingly, any upstream diversion which reduces this access would be considered illegal (Hall, 2004). Not surprisingly, downstream riparian countries, as disparate as Egypt and Israel, who may be at odds regarding certain aspects of Middle Eastern politics, agree on this principle with regards to access to the Nile River and the Mountain Aquifer respectively (Aberra, 2005).

It did not take long to realize that both of these extreme positions would frequently lead to "unjust" results, or at least results that left large populations

without an adequate framework for supplying basic water needs (Blatter, 2000). More moderate views emerged based on a "golden rule" of environmental consideration and conduct that was formally endorsed by the international community in the 1972 Stockholm Declaration. The United Nations Conference on the Human Environment at Stockholm was the first global gathering of leaders to seek multilateral international governance in response to transboundary environmental problems. Principle 21 of the Declaration holds that States have a sovereign right to exploit their own resources as long as their activities: "do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction" (Linner, 2003). Or as the playwright George Bernard Shaw glibly quipped: "Your rights end – where my nose begins."

Already, comparable legal doctrines in the area of water rights were attracting support in the expert community. The notion of Absolute Riverain Integrity and a Community of International Waters had already been advocated by scholars who felt that rivers basins and water bodies needed to be addressed as a holistic unit. According to this view, political sovereignty should be a secondary factor in the actual management decisions. In practice this meant that no riparian should act without the agreement of others. While this view was viewed as useful in the context of a federal system of government, in the rough and tumble of international relations, it was considered somewhat naïve and impractical (Dellapenna, 2001).

An alternative principal of *Limited Territorial Sovereignty* was not altogether different in its implications, but managed to receive a greater degree of international recognition. Relying on the Latin adage:*sic utere tuo ut altenum non laedas* (use property in a way that doesn't harm others) the needs of other states needed to be taken into account before unilateral action could be taken. Transboundary water resources could surely be utilized so long as it did not result in substantial harm to water interests of other riparians.

This position enjoyed support in a formal adjudicatory context during the 1957 Lake Lanoux Arbitration that resolved a water conflict between France and Spain. At issue was the French intention of establishing a hydroelectric plant that would divert waters away from Spain's Carl River. Spain opposed the project on the ground that it would affect the entire basin. The decision held that while France's extraction did not violate international law, Spain was entitled to be consulted prior to modification of the river. However, the ruling was anything but a Spanish victory. In rejecting Spain's claims, the arbitration ultimately rejected the granting of veto powers to any given riparian, even as it objected to unilateral activities that affect the hydrological reality of neighbors without meaningful consultation (Kiss, 2000).

The "middle of the road" position had already received an important endorsement in the "Helsinki Rules" that were approved in 1966 by the International Law Association (ILA). The Rules constituted a broad effort to formalize the principles of international water law. Yet, it succeeded in doing so in only the most general or of terms. The definition of an international drainage basin given under the Rules was clear enough: "a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters flowing into a common terminus" (International Law Association, 1966). The assignment of rights and responsebilities within these watersheds, however, was less clear.

The Helsinki Rules are most notable for their articulation of a new "reasonable and equitable" standard for determining allocation in transboundary watersheds: "Each basin state is entitled within its territories to a reasonable and equitable share in the beneficial uses of the waters in an international drainage basin." Yet, as always in international law, the devil is in the details.

Over the years the concept succeeded in gaining "consensus status" because it could easily be interpreted favorably by all parties in disputes. Indeed, the Rules themselves qualify the concept as a principle whose application cannot be readily defined nor predicted. Accordingly, Article 5 states that: reasonable and equitable "is to be determined in light of all relevant factors in each case." To be fair, Article 5 does set forward a list of "relevant factors" that need to be considered in determining what is reasonable and equitable. They include:

- Basin geography
- Basin hydrology
- Climate
- Past and existing utilization
- Economic and social needs
- Dependence of population on basin waters
- "Comparative costs of alternative means of satisfying economic and social needs of basin states,
- Availability of other resources,
- Avoidance of unnecessary conflicts, and
- Degree to which needs of basin state are satisfied."

But without any clear ranking of these factors, scholars were left with a list of amorphous inclinations that were later amorphously interpreted in the Helsinki commentaries. It is generally accepted that the general Helsinki perspective on water includes a preference for domestic use of water over alternative uses, along with a general recognition of the significance of past and present uses

relative to future ones (Sergent, 1997). (An alternative position, that prefers future uses, presumably would provide disincentives for present development.)

The next significant landmark in the evolution of international water law was the passage of the UN Convention on the Non-navigational Uses of International Watercourses. Adopted in September 1997 by the UN General Assembly, it was the culmination of 25 years of efforts and negotiations to better characterize internationally accepted principles of water law. The convention contains 37 articles which address the myriad areas that modern water policy addresses. Hence there are provisions regulating everything from flood control to water quality, erosion, sedimentation, and saltwater intrusion. While the treaty focuses on surface water, it does contain groundwater components.

The treaty reiterates Helsinki's fundamental axiom of allocation, obliging the UN members to use international watercourses in ways that are "equitable and reasonable". Yet, it also includes certain basic concepts of modern environmental policy. Concepts of "good neighborliness" find expression, including an obligation for cooperation and information sharing. Significantly, Article 5 adopts a precautionary posture calling on countries to take all appropriate measures to prevent the causing of significant harm to other states by any misuse of transboundary water resources.

A main question with which drafters of the UN wrestled was whether to embrace a "drainage basin" perspective or not. At issue, to a large extent was making groundwater subject to the standards of care mandated for riparians of surface water bodies. There was a strong lobby against inclusion, calling it a departure from traditional "channel based approach". Predictably, the breakdown of advocates and opponents split according to national hydrological interests or between "upstream" and "downstream" users. Notwithstanding the clear middle ground staked under the Helsinki Rules, upstream riparians argued for unrestricted territorial sovereign with downstream users advocating broader drainage basin approach (Schwabach, 1998).

The UN International Law Commission ultimately rejected this basin approach in favor of a more narrow definition for a watercourse: "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus."

In a word, the ILC sought to establish a definition that linked groundwater to surface flow. Specifically the treaty holds that water unrelated to surface water "should not be included because it lacks a physical relationship with surface water and does not form part of a unitary whole."

Yet, hydrological reality on (and under the ground) is far more complex than that which the ILC's would like to regulate. Gabriel Eckstein a hydrologist and legal commentator identified six different transboundary aquifer dynamics, which would not be captured by the simplistic ILC approach (Eckstein, 2005).

The Palestinian/Israeli dispute over the Mountain Aquifer is a fine example of the UN Convention's limitations. The Mountain Aquifer to be sure is transboundary, where recharge largely takes place in the highlands of Judea and Sumaria (the West Bank) but where wellheads are mostly confined to the Israeli lowlands. But the aquifer does not have a "common terminus". Hence it would seem that the UN Convention is not be applicable for resolving the dispute over this particular resource or for any other non-charging fossil aquifers.

Recognizing that the present definition was inadequate, in 2002, the ILC appointed Ambassador Chusei Yamada of Japan to further negotiate the subject of shared natural resources. Yamada brought together an interdisciplinary panel that advised his group on the nuances of managing transboundary groundwater systems, but to date, no formal treaty amendments have been adopted.

A discussion of relevant international water law must include the *Bellagio Draft Treaty.* Accordingly, a significant academic effort in the field took place during the 1980s when legal scholars attempted to move the area of "customary" law forward and define accepted principles for the management of transboundary aquifers. Beginning in 1977, over an 8-year period, a model treaty was drafted, largely motivated by the historic tensions that existed between the USA and Mexico over their shared aquifers (Rodgers, 1985).

The primary notion of *Belagio* is that of consensual allocation:

"water rights should be determined by mutual agreement rather than be the subject of uncontrolled, unilateral taking and that rational conservation and protection actions require joint resource management machinery" (The Bellagio Draft Treaty, 1989).

Among Belagio"s innovations are the creation of a concept of an "underground environment" that includes "conjunctive use" of surface groundwater in border areas. Moreover, "Transboundary Groundwater Conservation Areas (TGCAs) are to be established, referring to contiguous regions that should be jointly managed during drought in which allocations can shift based on competing needs.

Among the critical innovations of the treaty are:

- *proactivity*: it anticipates solutions for complex transboundary problems and does not wait for the conflict to 'come home to roost';
- *ground/surface water interface*: it links groundwater management with both water supply and water quality;
- *environment and equity focus:* the treaty places less emphasis on allocation than did previous agreements and raises the profile of equity and quality preservation;
- *ecological orientation:* the treaty includes riparian ecology, system management, as well public health considerations;

- *obligations:* Belagio creates binding requirements to protect the underground environment; and
- *monitoring:* parties are expected to provide 'reliable data and information'.

## 3. Agreements Between Israel and its Neighbors

While international multilateral treaties and international customary law have influence on the management of transboundary watersheds, ultimately it is the specific obligations taken on by riparians that determine the normative framework (and the ultimate success) of cooperative efforts in water management and their ability to ameliorate or even eliminate conflict (Dellapenna, 1994). For example, the USA and the World Bank responded to an increasingly explosive dispute between India and Pakistan over the allocation of the waters in the Indus River, forced both parties to the table and after 8 years of negotiations produced the 1960 Indus Waters Treat (Biswas, 1992). Since that time, India and Pakistan have hardly been on the best of terms, but hydro-political tensions surrounding the Indus have subsided and remained dormant.

In the case of the Middle East, the actual agreements signed on the area during the 1990s were undoubtedly influenced by the evolution of international water law. With the July 1992 election of a government led by Israel's Labor Party, new initiatives to resolve the conflict between Israel and its neighbors were launched. Culminating in the "Oslo Accords", after the Norwegian capital where much of the initial negotiations took place, in rapid succession Israel signed a peace treaty with Jordan and interim agreements with a newly created Palestinian Authority (Gleick, 1994). While often the dynamics of the negotiation relied more on age-old mid-east bargaining rituals than legal treaties, the agreements that were ultimately produced create a strong basis for ongoing cooperation (Feitelson, 2000). Indeed, these agreements produced some of the most detailed water pacts ever to appear in an agreement whose objective, primarily, was the cessation of a political/military conflict.

### 3.1. THE ISRAELI-JORDANIAN WATER AGREEMENT

Annex II regarding "Water Related Matters" was promulgated pursuant to Article 6 of the Israel-Jordan Peace Treaty that was signed at the Aqaba/Eilat border crossing on October 26, 1994 (Treaty of Peace, 1994). The annex opens with delineation of specific "seasonal" allocations to be granted to each side from water in the Yarmouk River. Jordan concedes to Israeli the pumping of an additional 20 million cubic meters (MCM) from the Yarmouk during the rainy winter season in return for an Israeli concession to deliver water during the dry, summer months (between May 15th and October 15th). Similarly, in return for

the additional water that Jordan concedes to Israel in winter, Israel granted an additional 20 MCM to Jordan during the summer months to be taken from the Kinneret "directly upstream from the Deganya gates" on the river. The ongoing costs of the transfer are to be borne by Jordan. Moreover, Jordan is entitled to "store" water that arrives during the rainy months in the Kinneret, that can then be delivered during the summer when supply is low.

The agreement goes beyond implicit acknowledgement of historic rights and the de facto past understandings regarding allocation from the 1950s, by specifically recognizing Israel's right to maintain its current uses of the Jordan River waters. While Jordan is entitled to an annual quantity equivalent to that of Israel, this is contingent upon its not harming the quantity or quality of historic Israeli uses. An another unanticipated "generous" gestures of the peace agreement was King Hussein's flexibility with regard to existing Israeli wells that fell within lands in the Arava Valley which under the territorial agreement, were to be transferred to Jordan. Israel is entitled to continue to use these wells and even increase the amounts extracted from them, assuming that such pumping does not appreciably reduce the yields or the quality of the ground water systems.

Article III of the Annex contains provisions that are to regulate activities that can affect water quality. Both countries undertake to protect the quality of the Jordan and Yarmouk Rivers, as well as the groundwater in the Arava Valley and their own water systems against pollution or contamination, as well as to prohibit unauthorized allocations. Monitoring stations are to be established along the border; these are to be operated by the Joint Water Committee (JWC). Waste waters discharged into the rivers are to be treated to a standard that allows for "unrestricted agricultural use" – and a 3-year timetable set to meet these standards. Rather than setting a single numeric water quality standard for waters that are transferred under the agreement, the Annex simply stipulates that the quality of water supplied from one country should be no different than the water it uses in the same location. As to the natural saline streams that Israel diverts from the Kinneret Lake into the southern Jordan, the Annex creates a 4-year timetable at whose end, the waters should be desalinized.

From the substantive perspective, the agreement appears to embrace the concept of absolute riverain integrity or good neighborliness in activities that affect a shared resource, proscribing unilateral actions. Hence, Article V prohibits artificial changes in the course of the Jordan or Yarmouk Rivers without mutual agreement. And each country commits itself to informing the other 6 months prior to undertaking any projects that might change the flow or the water quality of the rivers. The agreement also includes a commitment to cooperate in developing plans to increase water supplies and improving water use efficiency.

Institutionally, Article VII of the Annex creates a JWC, whose role it is to ensure that the new commitments to cooperation are implemented. For instance, the JWC is to discuss any projects that might cause adverse impacts and suggests measures to mitigate them. The countries also create a blanket obligation to "exchange relevant data on water resources" through the JWC.

The Committee is to be made up of three members from each nation (there is no international participation) but no stipulation is made to their professional qualification. The Annex authorizes the Committee to invite experts and/or advisors as may be required and form specialized subcommittees and assign them technical tasks. Two specific subcommittees are to be established according to the Annex: a northern and a southern subcommittee, for the "management on the ground of the mutual water resources in these sectors." The committee was indeed created, but has not continued to meet regularly and the subcommittees never became an important factor in ongoing management.

### 3.2. THE ISRAELI-PALESTINIAN WATER AGREEMENT

While the initial agreement between them related to the creation of Autonomy in Gaza and Jericho and was reticent with regards to most water issues, Israel's interim agreement with the Palestinians signed on September 28, 1995 in retrospect offers a fine basis for cooperation. The issue of water quantity allocation was largely left to be resolved in the negotiations over the final status (Interim Agreement, 1995). But Article 40 of Annex III to the agreement contains much more than the rudiments of a transboundary water treaty. Indeed a JWC created under section 11, is empowered with broad authorities to make managerial decisions, exchange information, grant licenses for wells, monitor, and resolve disputes. The committee, comprised of an equal number of Palestinian and Israeli members, continues to meet and function, despite the almost complete breakdown of all other political structures created under the Oslo accords. The JWC is given a broad menu of authorities with which to operate. Its mandate includes:

- Coordinated management of water resources
- Coordinated management of water and sewage systems
- Protection of water resources and water and sewage systems
- Exchange of information relating to water and sewage laws and regulations
- Overseeing the operation of the joint supervision and enforcement mechanism
- Resolution of water- and sewage-related disputes

- Cooperation in the field of water and sewage, as detailed in this Article
- Arrangements for water supply from one side to the other
- Monitoring systems
- Other issues of mutual interest in the sphere of water and sewage

The most important breakthrough of the agreement is resolution of the self-defeating dynamic that emerged during the initial period of negotiations regarding water. The Palestinian position, always passionate in its embrace of principles of "riparian use" was resolute in its demands that Israel return all waters in the Mountain Aquifer that it had appropriated from its rightful Palestinian owners before and after Israeli occupation of the West Bank in 1967. The Israeli position, based on its longtime faith in the theology of historic uses, rejected the notion that its utilization of waters from the Mountain Aquifer was in contravention of international law. Ultimately, it argued, the objective of negotiations should be expansion of existing water resources anyway, as both entities were extremely water stressed, by all international definitions of water scarcity. This somewhat circular dynamic ("you stole our water" – "no we didn't" – "yes you did") produced little progress but did succeed in exacerbating tensions and enmity (Tal, 2002).

Article 40 therefore contains a welcome compromise in this regard. Israel on the one hand recognizes Palestinian rights to much of the Mountain Aquifer: "Israel recognizes the Palestinian water rights in the West Bank. These will be negotiated in the permanent status negotiations and settled in the Permanent Status Agreement relating to the various water resources." At the same time the Palestinians acknowledge that: "Both sides recognize the necessity to develop additional water for various uses."

Most happily, with regards to water quality, the agreement goes beyond generalities and declarations. The Palestinian future needs are estimated as reaching 70–80 MCM of water per year. As an interim measure, until a final agreement provides a comprehensive resolution to the issues in dispute, Israel agreed to grant an additional 28.6 MCM annually to the Palestinian Authority. Basically deemed a "humanitarian" gesture, the objective of this concession was to ameliorate the acute shortages that existed. This transfer of water rights is broken down in a schedule of specific deliveries to be made to different regions of the West Bank. The Palestinians also took upon themselves obligations to dig additional wells in areas where additional water potential exists.

No less impressive is the general commitment to coordinated action to preserve water quality. The sides set forth a long list of principles according to which management of water and sewage resources were to be coordinated. These include:

- Preventing the deterioration of water quality in water resources
- Using water resources in a manner that ensure_sustainable use in the future, in quantity and quality
- Avoiding overpumping: (*Adjust utilization of resources according to variable climatological/hydrological conditions.*)
- Taking all necessary measures to prevent any harm to water resources, including those utilized by other side
- Treating, reusing, or properly disposing of all domestic, urban, industrial, and agricultural sewage and prevent any harm to the systems

From the perspective of international legal theory, the most impressive part of the agreement is the concrete commitment made to joint compliance and enforcement actions. The "JSETs" – or "Joint Supervision and Enforcement Teams" created under section 17 of the agreement constitute an unexpected innovation. The joint Palestinian/Israeli inspection teams' role is detailed in schedule 9 of the agreement. Each team is comprised of no less than two representatives from each side who patrol in parallel vehicles. The teams are given authorities to rectify a host of environmental infractions – from pirate extractions, to contamination of aquifers and even ensuring" operation and maintenance of systems for collection, treatment, disposal, and reuse, of domestic and industrial sewage, of urban and agricultural runoff, and of urban and agricultural drainage systems."

The JSET framework offers a refreshing level of specificity and tangible commitment by parties in an international agreement regarding water. In fact, even 10 years after its establishment, such a pragmatic approach to enforcement is unique in the international arena. While political unrest has temporarily neutralized the JSET activities, even during the most turbulent of times politically, the JWC continued to convene, offering a reliable and viable basis for dialogue and joint decisions (Tal, 2004).

In short, the agreement forged by Israeli and Palestinian diplomats over a decade ago, at least formally, remains legally binding and still constitutes a surprisingly innovative and effective instrument for ensuring cooperation. When one compares the existing Israeli/Palestinian agreement to other transboundary water agreements (e.g. the Incomati Basin agreement between South Africa, Swaziland, and Mozambique, the Mexican/US arrangement regarding the Rio Grande, or the Lake Peipsi arrangement reached between Estonia and Russia) it seems to provide a reasonable basis for continued cooperation.

## 4. Models for Managing Joint Watersheds: Lessons for the Middle East

Following this cursory discussion of the agreements regarding water management between Israel and its neighbors, a review of four legal frameworks in transboundary watersheds is briefly presented. These cases can serve as models, whose experience may be instructive. They include:

- The joint management by the USA and Canada of the rivers that transect their borders
- The agreement between Estonia and Russia to protect Lake Peipsi
- Efforts between riparians in Southern Africa to manage the Incomati Basin
- The evolution of the US and Mexican agreements in managing the Rio Grande

Each of these stories offers interesting insights and ideas that might be integrated into a final Israeli/Palestinian agreement or an upgraded Israeli/Jordanian accord in the area of sustainable water management.

### 4.1. BILATERAL MANAGEMENT OF TRANSBOUNDARY RIVERS – USA/CANADA

At the advent of the 20th century, tensions were growing between the USA and Canada over the water rights to several rivers that crossed their border. With the UK sitting in, by 1909 an agreement was reached that took the title: *Treaty Relating to Boundary Waters Between the United States and Canada* The treaty relied heavily on an institutional resolution of disputes.

Specifically an International Joint Commission (IJC) was created within the treaty framework. The IJC is comprised of six commissioners (three from each country) and charged to act "impartially". The goal was to create an independent managing body that could execute the agreement objectively, without being divided according to purely national interests. To ensure this outcome, the commissioners were granted immunity in both countries for any decisions they made in the IJC context. Empowering the body even further, the Treaty declares that decisions of the IJC cannot be appealed and can only be revoked by a joint US/Canada agreement (Hall, 2004).

The IJC's ostensible success in resolving water-related disputes can be attributed to its operational orientation which has emerged over time. The Commission indeed has achieved a high level of impartiality and whenever possible, it seeks consensus (Parrish, 2005). When disputes arise, all interested parties are given the opportunity to be heard. In environmental matters, the IJC has come to adopt policies based on a series of environmental principles:

- Principles of sustainable development
- An ecosystem approach towards water management
- A commitment to elimination of persistent toxic substances
- Reliance on sound science, and when in doubt, adoption of the *precautionary principle* as a guideline

Historically, it is hard not to be impressed by the institutional stamina and the Commission's ability to remain relevant, despite the geopolitical, economic, and ecological vicissitudes in the two countries. In 1931, it was the IJC that oversaw the historic arbitration that has come to be called the *Trail Smelter Arbitration* (1938) in which it recommended emission reduction for air polluters. As the first meaningful transboundary air pollution case in the world, the ruling has become required reading in any international environmental textbook or treatise.

Over a decade later, the IJC suggested a clear framework for allocating the benefits derived from the Columbia River and in 1961 brokered the Columbia River Development Treaty. During the 1970s, the IJC shifted its focus to the Great Lakes region where it shepherded a Great Lakes Water Quality Agreement between the countries in 1972. In 1978 the agreement was expanded to include persistent toxics. Ten years later, in 1987, the IJC was drafted to review "Remedial Action Plans" to reduce toxic substances in 43 areas of concern around the lakes.

In recent years the IJC has been as active as ever. In 1997, the US and Canadian governments asked the Commission to prepare a report detailing the upcoming environmental challenges that would affect transboundary water management during the 21st century. The list compiled provides an agenda for future cooperation that should be relevant to Israeli/Arab Joint Water Commissions:

- Population growth and urbanization
- Climate change
- Economic expansion and energy demands
- Technological development
- Environmental awareness

The IJC has not passively waited for crises to emerge from neglected problems, but actively lobbied for solutions, for example the establishment of joint watershed boards to manage the St. Croix, Rainy and Souris rivers (Hall, 2004).

In retrospect, the IJC has been a lasting influence for environmental cooperation in the northern hemisphere. Like any public body it has not escaped criticism. Inadequate public participation and the lack of sufficient authority are among the more common critiques (Hall, 2004). Nonetheless, the IJC has

identified over 130 disputes that it helped reconcile or avert completely. Even if the actual number of cases where meaningful progress was made is only a fraction of this, it would still constitute a highly successful venture in transboundary water management.

There are many lessons that bilateral, final agreements between Israel and its neighbors might glean from the IJC experience. These are primarily in the area of institutional identity. The existing Israeli/Palestinian – Israeli/Jordanian Joint Water Commissions are dominated by cautious government officials whose loyalties are obvious and whose level of initiative is limited. After all, their domestic responsibilities are daunting enough. Making the leap towards true "holistic" watershed management, may require the sort of independence that the IJC enjoys and insulation from political influences.

### 4.2. LAKE PEIPSI/(CHUDSKOE-PSKOVSKOE) AND THE ESTONIAN-RUSSIAN TRANSBOUNDARY WATER COMMISSION

Lake Peipsi is the world's fourth largest lake and by far the largest transboundary surface water body in Europe. Located on the border of Estonia and the Russian Federation, the Estonian part of Lake Peipsi contributes 89% of the country's surface freshwater, as well as providing some 95% of the country's fish catch from fresh waters. The breakup of the Soviet Union necessitated international negotiations to ensure sustainable management of the Lake (Vinogradov, 1996). The paramount ecological challenge was the prevention of eutrophication due to excess loadings of nutrients, with the primary contaminants in the lake attributable to polluted river water and precipitation.

To oversee cooperation in this regard, the Estonian-Russian Transboundary Water Commission was established in 1997 between the Republic of Estonia and the Russian Federation (UNESCO, 2002). The Commission quickly became the primary actor in managing Lake Peipsi. The list of authorities granted the Commission reflects the willingness of both parties to sacrifice authorities associated with national sovereignty in order to ensure the responsible management of the lake. Among the authorities granted to the Commission are:

- Exchange of monitoring data between the parties
- Priorities and programs for sustainable use of transboundary waters
- Common indicators of quality for transboundary waters, along with the methods of testing and analyzing water
- Cooperation between executing agencies, local governments, scientific, and public interest organizations
- Communications related to use and protection of waters

The Commission has established formal mechanisms for development of cooperation with local authorities, nongovernmental organizations (NGOs) and stakeholders, which allows local organizations and stakeholders in the region to participate directly in the work of the intergovernmental commission. In practice, relatively few regional NGOs are actively involved in the work of the Commission. This is largely due to the limited resources and capacity of local organizations. Without external financial support, it is unlikely that the NGO community will fully realize its potential role as a contributor to a transboundary management framework. Yet, groups such as the Peipsi Center for Transboundary Cooperation (CTC) and the Council for Cooperation of Border Regions, have already shown the potential for fruitful cooperation with local authorities and stakeholders in influencing regional development projects as well as on educational, research, and social projects in the region. The Peipsi CTC is also actively involved in the work of the Estonian-Russian Transboundary Water Commission (UNESCO, 2002).

Another important aspect of the Peipsi experience is the involvement of commercial interests in the joint management program. For example, regional authorities and businessmen are trying to reestablish passenger and cargo transport across the lake. Drinking water supply from the lake is another area where commercial interests are now involved in joint ventures. A critical stage in the transboundary management strategy involves the preparation of a Lake Peipsi Management Plan. A joint effort drafted by the Estonian and Russian governments, regional and local authorities as well as private and public companies – the plan is slated for completion 2007.

The water agreements between Israel and its neighbors have much to learn from the experience at Lake Peipsi. Chief among these is the creation of a regional master plan that proactively can help diffuse and depoliticize complex water and potentially explosive issues. The emphasis on joint monitoring of water quality is another area where present agreements are silent. The encouraging of joint commercial interests, particularly in the area of drinking water delivery offers an opportunity to create confidence-building measures in the private sector, using the profit motive to supplement the general "impulse for peace" which is often tenuous or insufficient to bring potential partners together. Finally, the NGO involvement and the outreach effort to engage civil society is a far cry from the relatively insulated approach of Israeli and Jordanian/ Palestinian government officials.

### 4.3. THE INCOMATI BASIN: COOPERATIVE WATERSHED MANAGEMENT BETWEEN SOUTH AFRICA, MOZAMBIQUE, AND SWAZILAND

The Incomati Basin offers an example of where efforts to jointly manage a transboundary water resource are hampered by lack of harmonization between national legislative frameworks and the absence of an accountable international commission to see implementation through. In 1997, both Mozambique and South Africa adopted the UN Convention on the Law of the Non-Navigational Uses of International Watercourses as a basis for management of the Incomati Basin (Lindstrom, 1997). Swaziland, the third riparian in the catchment, however, was not party to the agreement.

Immediately, gaps emerged between the expectation of the Southern African Development Community (SADC) protocol and the existing framework for managing the watershed. As a downstream riparian, in 1999 Mozambique perceived the UN Convention as a basis for strengthening the regional SADC Protocol on Shared Watercourse systems. The amendments, proposed by Mozambique representatives established a new version of the SADC Protocol, integrating the principles found in the UN Convention, highlighting both environmental and downstream needs (Leestemaker, 2001).

The amended SADC Protocol essentially adopts a watershed perspective, embracing the "territorial integrity" of the Incomati watercourse as a single hydrological unit. Unfortunately, domestic law in the three countries is fundamentally different, complicating implementation of the agreement. For example, the central role of the King and traditional chiefs in Swaziland focuses on amorphous concepts of responsibility and ownership, and avoids any specifics regarding water rights and allocation. Moreover, South Africa has begun to decentralize its water management system, in contrast to Mozambique's strict "state ownership" and organization. Another obstacle to an integrated basin-wide management program is the lack of symmetry between the small, disorganized, indigenous local users and the large industrial (frequently "multi-national") corporate users, such as sugar and electric companies or agribusiness (Turton, 2002). Also, without very clear provisions in national legislation to ensure environmental protection, and a stronger regulatory presence by central governments among the riparians the prospects for treaty implementation are bleak.

When considering the lessons of the Incomati experience, it is well to remember the relative asymmetry that exists between Israel's economic capabilities and that of its neighbors. While Israel enjoys a per capita income which exceeds US $17,000/year, resources in Jordan are a fraction of that and after 6 years of political turbulence, the Palestinian sector is practically destitute. Without providing resources for the infrastructure necessary to meet obligations in water agreements, real progress cannot be anticipated. The lack of follow-through in the commitments in the Jordanian Israeli water agreement are proof

that resources (and to some extent political will) provide real obstacles to turning ambitious transboundary accords into reality on the ground.

## 4.4. COOPERATIVE WATER AGREEMENTS ON THE RIO GRANDE

The US experience with its southern neighbors is somewhat less successful than that transpiring on the northern, Canadian border. On the Mexican border, an institutional solution was again sought to resolve the inevitable conflict surrounding allocation of the two great transboundary southern rivers: the Rio Grande and the Colorado. According, the International Boundary and Water Commission (IBWC) came into being pursuant to the provisions of two key legal instruments: The Convention of 1889, created the International Boundary Commission (IBC), while half a century later the 1944 Water Treaty (The Treaty Relating to the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande) changed the Commission's name to the name of IBC to IBWC. The key instrument that the Commission seeks to implement is the somewhat prolix: "Convention between USA and Mexico Providing for the Equitable Distribution for the Waters of the Rio Grande for Irrigation Purposes (1906)".

This treaty defines allocation for the USA from the Rio Grande (and for Mexico from the Colorado). The 1944 treaty allocated some of 350,000 acre-feet of flow annually from the Rio Grande. This allocation included "Extraordinary Drought" provisions – (made up over 5 years). At the same time, water delivered to Mexico from the Colorado River was to reach 1,500,000 acre-feet/year (Mumme, 2005).

The 1944 treaty confers upon the IBWC the status of an international body. It also attempts to ensure the professional character of the Commission by stipulating that both the Mexican and American head must be engineers. The Commission is to initiate joint actions or implement joint agreement by Governments. Its substantive mandate is clearly set forward in a list of specific objecttives (Hall, 2004). These are defined as:

- Distribution of the waters of Rio Grande and of the Colorado River between the two countries
- Regulation and conservation of Rio Grande waters for use by the two countries through joint construction, operation and maintenance of international storage dams and reservoirs, as well as plants for generating hydroelectric energy
- Regulation of the Colorado River waters allocated to Mexico
- Protection of lands along river from floods by levee and floodways

- Solution of border sanitation and other border water-quality problems
- Preservation of Rio Grande and Colorado River as international boundary
- Demarcation of the land boundary between the USA and Mexico

The mechanics of the IBWC reflect the pragmatism born of a century of work. Each country maintains separate, local headquarters with its own staff. The Commissioners themselves constitute a functional team, meeting weekly and maintaining daily contact. The cooperative projects carried out by the IBWC originate in different ways. On the one hand, the IBWC is required to implement provisions found in existing treaties. Yet, the specifics of any joint IBWC initiative necessitates negotiation over the details of an operational agreement. These agreements take the form of "Minutes" that are signed by each Commissioner. Once the "minutes" are approved by each country, they become normatively binding on the two governments (Gavrell, 2005).

Recently, attention surrounding the IBWC focused around negotiations to settle the "Rio Grande Water Debt". Inasmuch as "drought" is poorly defined in the treaty, the results of sustained drop in rainfall were quickly felt in water delivery to the USA By June 2002, Mexico "owed" the USA a full 2 billion $m^3$ of water that the treaty compelled them to deliver via the river, but which they had not. To understand the magnitude of the deficit, these 480 billion gallons of water are enough to provide Los Angeles with all its water needs for 2 years. Accordingly, in 2002, the IBWC Commissioners signed Minute Number 308 which offered a partial solution to the Mexican water debt (Mumme, 2005). Beyond discussion of water quantities, the agreement commits both parties to increased investment in water conservation of the Rio Grande drainage basin and recognizes the need for additional institutional reforms (including a binational conference) to strengthen the sustainable management of Rio Grande waters.

In retrospect, the Mexican/US experience along the Rio Grande offers an example of an institutional solution to water scarcity and joint management of a common hydrological resource. Most of the management problems that arose for over a century were resolved peacefully, through a fundamentally apolitical binational body. The fact that the treaty does not limit itself to "supply" but imposes expectations for water conservation on both sides is also significant. On the other hand, there is much to be learned from the deficiencies of the Rio Grande dynamics. Hydrologically, any strategy for managing groundwater is conspicuously lacking and there is no real attempt to address the "ecological" needs of the river basin. The treaty also has not been sufficiently dynamic. Since 1944, the hydro-political reality has changed and Mexico is left disadvantaged, despite its weaker economic status. Ultimately, compliance with

the agreement has not been as impressive as those existing between the USA and Canada.

Many of these critiques can be levied against the present water agreements to which Israel is a party with its neighbors. The fact that drought conditions are likely to become exacerbated under most climate-change scenarios suggests that water treaties must be more specific about finding equitable solutions to adjust to the ineluctable cycle of wet and dry years. Moreover, the professional nature of the Commissioners and their mandate to take proactive initiatives stands in context to the present framework set forth between Israel and its neighbors.

## 5. Conclusion

Given the fact that Israel's water agreements are part of far broader peace agreements intended to resolve all aspects of a protracted and complex conflict between historic adversaries, the provisions they contain that focus on resolution of water disputes are impressive. The institutions established to coordinate water management are certainly comparable in size and composition to successful, preexisting models. While they do not enjoy some of the flexibility and independence of other JWC, given the sensitivity of the overall political climate, this is surely understandable and is something that could change in subsequent agreements. The fact that there are good agreements that can literally be taken back off the shelf, without the need for the tiresome rituals of negotiations is encouraging.

In the first round of negotiations, water quantity allocation dominated the agenda, which may have made it easier to "slip in" many of the excellent environmental provisions. However, this is also reflected in the lack of a meaningful implementation programs and the general disappointment with compliance on both sides with many of the water quality-related commitments. Nonetheless, even conscientious environmental officials would have had a hard time overcoming the general context of enmity and renewed violence that has characterized so much of the local experience in the new millennia since the agreements went into effect. Moreover, the great gaps in economic capability and existing environmental infrastructure between Israel and its neighbors have only grown worse during the past several years. This asymmetry could potentially become a serious obstacle to progress once the countries return to an "implementation" mode and the present hostilities (and consequent environmental coexistence stalemate) subside. Yet it could surely also offer an opportunity for external economic support to Israel's Arab neighbors, as the donor community seeks to find constructive ways to contribute to a lasting peace arrangement.

There are several areas, however, where Israeli, Jordanian, and Palestinians negotiators in the next round, who consider a final resolution might gain valuable insights from the world and other transboundary water agreements. Among these are greater engagement of the public, and mechanisms for involving them in a framework for comprehensive hydrological planning that should be done together to preserve water quality and ensure water supply. The objectives of this planning framework (and a deadline for completion) need to be clearly defined in a new agreement. The private sector might also be mobilized through the next round of agreements, either as subcontractors or as primary actors in a regional water market that is the subject of so many academic proposals (Fischer, 2004).

Looking to the future, it is likely that the success of desalination will lead to a diffusion in the tensions surrounding water-quantity issues (Kroneneberg, 2004). As the price for "manufactured" water continues to drop, and availability increases, water quality issues, including supplying wet, ecological habitats will grow significantly. Aquatic habitats, restoration of streams, and reviving the Dead Sea can suddenly be a salient topic, even in arid regions, should the political will exist. Today the technology is in place. Not just ecology but economics should figure in future agreements. Water-supply provisions should be joined by joint demand-management strategies, as is found in other treaties, to ensure that a resolution of the water disputes is not just reasonably equitable, but also reasonably efficient. The success of past water agreements around the world for creating shared frameworks for watershed management, and a growing consensus about just what the substance of "international water law" is, offer hope that the present conflict between Israel and its neighbors will be resolved through negotiations and yet another chapter in the evolving history of transboundary water agreements.

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