

WATER POLITICS IN SOUTH ASIA: TECHNOCRATIC COOPERATION AND LASTING SECURITY IN THE INDUS BASIN AND BEYOND

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Water, like religion and ideology, has the power to move millions of people. Since the very birth of human civilization, people have moved to settle close to it. People move when there is too little of it. People move when there is too much of it. People journey down it. People write, sing and dance about it. People fight over it. All people, everywhere and every day, need it.

—Mikhail Gorbachev¹

The distribution of environmental resources as a potential contributor to conflict has been the subject of considerable research, and these linkages have dominated the post-Cold War interest in environmental security.² Within this genre much attention has been given to water resources, owing to their vital importance for human survival. The distribution of environmental resources may contribute to conflict, but recent scholarship has begun to focus on the potential of environmental threats in stimulating conflict resolution.³ Uniting around a common aversion to environmental threats, as well as confidence-building through environmental cooperation, potentially hold great appeal for policymakers who aim to engage in proactive problem-solving rather than in precise problem identification. What is most significant for government decisionmakers to consider is that even if a conflict is not environmental in nature, the remedy may well be achieved through environmental means. Environmental cooperation may offer pathways to confidence-building or peacebuilding, whether or not the conflict has environmental roots.

This essay explores the potentiality of such instrumental cooperation in the case of South Asia where regional conflict between two nuclear neighbors, India and Pakistan, is predicated in a history of religious rivalries and post-colonial demarcation. Despite inveterate antagonism, the two countries have managed to cooperate over

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water resources of the Indus River. How was this riparian cooperation enabled? And can it be reconfigured to provide for lasting peace in the region?

ANATOMY OF THE INDUS WATERS TREATY

The Indian subcontinent quite literally owes its name to the waters of one river—the Indus. Regional politics are closely tied to the river’s history and how different societies have used its waters for livelihood and for consolidating power. Hindu nationalists frequently recount that the very essence of their faith, dating back to the writings of the Rigveda in the second millennium B.C.E., is linked to the flow of the Indus. The name itself is a Latinized version of *Sindhu*, which means river in ancient Sanskrit, and from which the word “Hindu” and its concomitant ethnoreligious identity emerged.⁴ The partition of the subcontinent by the British in 1947 gave all but the very upper headwaters of the Indus to the newly formed Muslim majority country of Pakistan. More significantly, the major tributaries of the Indus that provided irrigation water for the fertile and densely populated region of Punjab on both sides of the border were divided. This was a classic conflict situation between upstream and downstream riparians, exacerbated by a lack of trust and intense territorial animosity between the two sides. This led to a series of disputes related to the Indus and its tributaries. Both countries tried to settle the matter bilaterally several times after partition but no lasting agreement was reached until the World Bank got involved as a mediating entity.

The resulting agreement, known as the Indus Waters Treaty, took nine years to negotiate and was signed in 1960. It is a particularly remarkable treaty since both sides have otherwise had tremendous hostility for one another and have defied efforts at cooperation. It is therefore instructive to consider the development and history of the treaty in greater detail as a potential model for regional environmental cooperation. The treaty is often cited as a success story of international riparian engagement, as it has withstood major wars between the two signatories (in 1965 and 1971), several skirmishes over water distribution and derivative territorial concerns.⁵ The agreement is also heralded as a triumph for the World Bank, which played an instrumental role in its negotiation during the height of the Cold War. The World Bank’s role in this region was particularly unusual because India was a vanguard of the Nonaligned-Movement and wanted to disavow any pressure from international institutions or Western nations.

The initiator and technical adviser of the agreement was David Lilienthal, the former head of the United States’ Tennessee Valley Authority, who suggested that an engineering perspective could contribute to resolving this political stalemate.⁶ After a visit to India and Pakistan in 1951, he advised the two countries to divide the Indus Basin geographically. India would have unrestricted use of the three eastern

rivers (the Ravi, Sutlej and Bias), while Pakistan would completely control the three western rivers (the Jhelum, Chenab and Indus). The World Bank played a significant role by providing mediation, support staff, funding and proposals for pushing negotiations forward. Under the leadership of President David Black, the World Bank was able to persuade the international community to contribute nearly \$900 million for impoundment construction.⁷

Nine years after Lilienthal's initial visit, both countries were finally convinced to sign the agreement. The Indus Waters Treaty obligated Pakistan to build a canal system, which, by utilizing previously less-developed rivers, decreased Pakistan's dependence on the Indus tributaries the treaty gave to India. The treaty also charged India and Pakistan with exchanging information and establishing joint monitoring mechanisms of river flow to ensure enforcement. The key provisions of the agreement are as follows:

- ♦ An agreement that Pakistan would receive unrestricted use of the western rivers, which India would allow to flow unimpeded, with minor exceptions;
- ♦ Provisions for three dams, eight link canals, three barrages and 2,500 tube wells to be built in Pakistan;
- ♦ A ten-year transition period, from 1 April 1960 to 31 March 1970, during which time water would continue to be supplied to Pakistan according to a detailed schedule;
- ♦ A schedule for India to provide its fixed financial contribution of \$62 million in ten annual installments during the transition period; and,
- ♦ Additional provisions for data exchange and future cooperation.⁸

As is often the case with riparian agreements, the treaty also established the Permanent Indus Commission, made up of one commissioner of Indus Waters from each country. In the technocratic spirit of the agreement, these representatives are often engineers rather than politicians. The two commissioners meet annually in order to:

- ♦ Establish and promote cooperative arrangements for implementation of the treaty;
- ♦ Promote cooperation between India and Pakistan in the development of the waters of the Indus system;
- ♦ Examine and resolve by agreement any question that may arise between the two countries concerning interpretation or implementation of the treaty; and,
- ♦ Submit an annual report to the two governments.

Both countries have upheld the Indus Basin Commission's information-sharing responsibilities; data on new projects, the water level in rivers and the water discharge

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of rivers are routinely conveyed to the other parties. If conflicts rise to the level of a dispute, the Indus River Commission will agree to mediation or arbitration, and the World Bank will appoint a neutral expert who is acceptable to both countries to resolve the dispute. Remarkably, although India and Pakistan constructed and carried out this agreement amidst skirmishes, threats and full-scale war, and even during armed conflict, neither country sabotaged the other's water projects. One of the water negotiators for Pakistan has commented that the role of international institutions is vital in making this enterprise function:

Both the parties are under the obligation of the Indus Waters Treaty, which asked the signatories not to disrupt the functioning of the commission. Any hurdle in the working of the commission is challengeable under the treaty, the guarantor of which is the World Bank.⁹

No projects allowed under the treaty's provision of "future cooperation" have been submitted since 1960, nor have any water quality issues.¹⁰ There have, however, been several other disputes that have arisen over the years. The first issues arose from Indian non-delivery of some waters during 1965 to 1966 that became questions of procedure and of the legality of commission decisions. Negotiators resolved that each commissioner acted as a government representative and had the authority to make legally binding decisions.¹¹ Another dispute involving the design and construction of the Salal Dam on the Chenab River in Jammu, India was resolved by way of bilateral negotiations.¹²

As noted in a recent World Bank study of Pakistan's water policy, India and Pakistan advocate conflicting principles of management: "equitable utilization" and "no appreciable harm," respectively.¹³ Both sides continue to foster misgivings about the treaty but accept it as the best option in a time of conflict. From the Indian perspective, the 75 percent allocation of water to Pakistan represented a fundamental violation of equitable utilization.¹⁴ From the Pakistani perspective, the allocation of only 75 percent of the water when it possessed 90 percent of the irrigated land was a violation of the principle of no appreciable harm.¹⁵ As a mark of how leadership can achieve reconciliation despite high tensions, former Pakistani President Ayub Khan is quoted in the aforementioned study as saying,

we have been able to get the best that was possible...very often the best is the enemy of the good and in this case we have accepted the good after careful and realistic appreciation of our entire overall situation....The basis of this agreement is realism and pragmatism.¹⁶

As part of a study of the Tarbela and Mangla dams (the two Pakistani impoundments constructed as a result of the treaty), the World Commission on Dams concluded that:

The Indus Waters Treaty represents the only ongoing agreement between India and Pakistan that has not been disrupted by wars or periods of high tension. Cooperation that builds on this treaty could not only present opportunities for better water management between those two countries, but also serve as a model for water-sharing arrangements between India, Bangladesh and Nepal.¹⁷

BEYOND TECHNICAL COOPERATION: PROSPECTS FOR INSTRUMENTAL PEACE

Although the Indus Waters Treaty has been able to overcome some minor issues (such as the Salal Dam dispute, which was resolved in 1978 through a new treaty), it has not been able to facilitate the resolution of larger conflicts, like Kashmir. The prospects for using the agreement over riparian issues as a means of conflict resolution more broadly can be traced back to a statement by U.S. Assistant Secretary of State George McGhee, who pointed out in 1951 that,

a settlement of the canal waters question would signify those basic reversals of policy by the Governments of both India and Pakistan without which there can be no political rapprochement. Thus, the canal waters question is not only a functional problem, but also a political one linked to the Kashmir dispute.¹⁸

As reported in the World Bank archives on this case, the British Prime Minister Anthony Eden felt that if this linkage were not possible, the resolution of the waters dispute could at least reduce tension over Kashmir.

Interestingly enough, at one time it was argued by Pakistani politicians that the urgency of territorial claims on Kashmir for Pakistan also had a hydrological component. In 1957, the Pakistani prime minister, Hussain Suhrawardy, stated publicly that, "There are as you know six rivers (in the Indus Basin). Most of them rise in Kashmir. One of the reasons why, therefore, that Kashmir is so important for us is this water, these waters which irrigate our lands."¹⁹ However, since then, the Pakistani government has de-linked the Kashmir dispute from the reconciliation over water allocation. Commenting for this research on the potential of using the treaty as a conduit for resolving the Kashmir conflict, the Pakistani government's senior spokesmen on foreign policy, Mohammed Sadiq, stated the following:

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The Indus Waters Treaty has been an important document for the water issue between the two countries. It has also helped in a framework for the resolution of water disputes in the region. Pakistan is fully committed to the treaty in letter and spirit. As far as the Kashmir dispute, this is not a water issue. It relates to the inalienable rights of Kashmiri people to self-determination.²⁰

As early as 1951, the Indian government has argued adamantly that: "The Canal Waters dispute between India and Pakistan has nothing to do with the Kashmir issue; it started with and is confined to the irrigation systems of East and West Punjab."²¹

Yet this decision to de-link the two has been made consciously by politicians, despite the ecological reality that Kashmir does indeed lay strategically within the headwaters of the river systems. In fact the Indus flows right through the valley corridor that connects Indian and Pakistani-held Kashmir. One can thus consider the cooperative role of water in this case at two levels. First, as suggested in the aforementioned statement by George McGhee, the resolution of the water dispute was a necessary but perhaps not a sufficient condition for conflict resolution over Kashmir. Second, since that condition for water cooperation has been met, the communication and opportunities for trust-building provided by the treaty continue to act as a potential means of further cooperation at the level of political psychology. Therefore, the Indus Waters Treaty has become the strongest link of cooperation between the two sides and, in times of crisis, it is often referenced as the ultimate cord of engagement that might be cut.

The latter proposition was put to the test in December 2001 following the Kashmiri militants' attack on the Indian Parliament two months prior, when India threatened to unilaterally abrogate the Indus Waters Treaty. However, six months later, the Permanent Indus Commission, which was established as part of the treaty, still met for the thirty-seventh time in New Delhi and the agreement weathered the storm yet again.

On a technical level, the Indus Waters Treaty was tested again when both India and Pakistan considered new dam projects to meet rising energy demands. India is undertaking the Baglihar Hydropower Project (BHP) on the Chenab River in India, 160 kilometers north of Jammu, under severe opposition from Pakistan.²² Apart from objecting to the project design of the BHP, Pakistan has expressed opposition to the Tulbul navigation project, the Sawalkote Hydroelectric Project and the Kishanganga Hydroelectric Project, all located in Jammu and Kashmir.²³ The Baglihar dispute was taken to the World Bank, which appointed a neutral technical expert, Swiss engineer Raymond Lafitte, in August 2005 to make a binding decision

Table 1: Policy lessons from the Indus Basin case

<i>Key policy issue</i>	<i>Effects thus far</i>	<i>Future prospects</i>
Acceptability of technical solutions	Very effective in providing civil engineering solutions to dam sites and scale issues	Joint hydrological studies between Indian and Pakistani scientists to promote trust
Robustness of agreement in absence of trust	Withstood conflicts through regular mandated meetings and Indus Basin Commission constituted by technical experts and managers	Agreement likely to be a model for other bilateral agreements on fisheries, trade, and oil and gas pipelines
Role of external agent (World Bank)	Continuing support of dispute resolution system and water resource assistance strategies	Make such agreements part of regional development strategy for South Asia
Peace dividends for existing conflicts	Relatively few visible impacts on peacebuilding; Agreement relegated to mid-level technical exchange and management	Since river headwaters are in Kashmir, the agreement could be used as a conduit for the Kashmir dispute resolution process

on the case. Lafitte gave his ruling on the dispute in early 2007 and the matter was amicably settled, with both sides claiming victory.

So far, the Indus Waters Treaty has served its purpose in de-escalating tensions over riparian water and has provided a direct avenue for regular, if technical, dialogue between the countries. It has not led to greater peacebuilding between the two countries as some of the original motivators of the treaty may have hoped. However, these most recent dam projects in Kashmir raise some potential prospects for using the agreement more instrumentally in resolving the Kashmir dispute. Increasingly, Kashmiri politicians are arguing that since the status of the territory is uncertain and so many of the disputes are in Kashmiri territory, they should be part of the Indus Basin negotiations as well.²⁴ Whether such integrative solutions to the conflict would be found through cooperation on water remains to be seen, and is largely a question of leadership. Even when all the ingredients of rational state behavior are in place, the ultimate action is

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dependent on individual leaders. Table 1 summarizes some of the key lessons from this case.

The Indus Waters Treaty may also be relegated to a broad range of confidence-building measures that countries may develop during times of crisis. As Shaista Tabassum has argued, the treaty did initially help to build some measure of conciliation between the two countries and was also framed as a “conflict avoidance measure.”²⁵ Soon after the treaty was signed, both countries did agree to negotiate actively on Kashmir and six rounds of talks were held from 1962 to 1964. However, the talks failed because of territorial intransigence on both sides and the escalation of domestic political pressures. It may also be argued that the de-linkage of the substantive issues related to the Indus Waters Treaty and the development of Kashmir as a region might have provided an opening for dialogue which was not availed. India’s dominance as a hegemonic power in the region also gave it much more negotiating power that was not effectively countered by international pressure. For efficacy in such asymmetric circumstances, it is also important to consider the regional dynamics of cooperation over water.²⁶

REGIONAL SOUTH ASIAN STRATEGIES

South Asia has a remarkable history of cooperation over water-related issues in both maritime and riparian areas. India is South Asia’s major littoral state, and shares maritime borders with several other South Asian states; in contrast, none of the other states have maritime borders with each other. India has settled its maritime boundaries with several of its neighbors, signing twelve bilateral agreements, including nine agreements with the Maldives, two each with Sri Lanka, Indonesia and Thailand, and one with Myanmar, as well as three trilateral agreements with Sri Lanka and the Maldives, Indonesia and Thailand, and Myanmar and Thailand.²⁷ Pakistan has also signed two bilateral agreements to settle its maritime disputes—one with Oman and the other with Iran. However, maritime disputes continue between India, Pakistan and Bangladesh.

In the case of Bangladesh and India, the problem is not the maritime boundary, which can be defined fairly easily, but rather competing sovereignty claims over the island of Talpati.²⁸ Bangladesh has a concave coast, and maritime boundaries in such geographical structures require integrative solutions and are extremely difficult to draw. Nevertheless, if a comprehensive settlement is reached in such cases, environmental factors can play a pivotal role since they help link various issues such as economic development and security. For example, a joint conservation monitoring arrangement can allow both sides access to areas that would otherwise be off-limits and give both sides an opportunity to cooperate in reducing environmental degradation. In particular, states that are ecologically vulnerable to extreme climatic events, such as

Bangladesh, are recognizing that poor environmental planning in coastal areas can have devastating economic impacts. The old environment/economy tradeoff is becoming less relevant as environmental pressures begin to have direct economic impacts. Pakistan's maritime dispute with India over the Sir Creek region could conceivably provide an opportunity to forge such a link between economic development and environmental cooperation.²⁹

In addition to maritime dispute settlements, several important river-sharing treaties have also been concluded in South Asia. India has agreements with Nepal, Bangladesh and Pakistan over riparian issues that are likely to be expanded in the future. Nepal, a small landlocked neighbor of India, is the upper riparian on the Mahakali River, which flows from Nepal into India. After protracted negotiations, the two states agreed on a treaty for the river in 1996. The importance of water negotiations was highlighted by the fact that the Nepalese parliament passed the treaty with the required two-thirds majority, despite a serious political crisis in Nepal at the time. According to commentator Krishna Rajan:

The treaty attracted attention in a number of countries as an important indication of the ability of India and Nepal as multiparty democracies to reach an agreement on cooperation on water resources on the basis of equality, transparency and equitable sharing of costs and benefits....it does offer a model for India and Nepal on how to reach important understandings despite the uncertainties of democratic politics and coalition governments.³⁰

Also in 1996, India and Bangladesh signed a treaty on India's construction of the Farakkha Barrage, a dam that diverts the flow of the Ganges River into the Hooghly River during the dry season to flush silt from the port of Calcutta. The negotiations were spread over two decades and, after overcoming a number of controversies, finally concluded in the form of a thirty-year Farakkha Barrage Treaty. Regional organizations are often an important mechanism in promoting multilateral peacebuilding efforts. South Asia, as an example, has the potential to engage in such a process through the South Asian Association for Regional Cooperation (SAARC), which was established in 1985. While bilateral dispute resolution is excluded from SAARC's mandate, there are numerous aspects of bilateral disputes, which can have multilateral, or even global, implications. For example, the Siachen dispute between India and Pakistan has prevented scientists from studying glacial recession, hydrological impacts and climate change that can potentially influence the entire region. Arguments can thus be made that many

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of the so-called bilateral disputes that involve ecological factors have a salient global purpose.³¹

Despite discouraging signs that both quantitative and qualitative environmental issues (scarcity and pollution, respectively) have historically been relatively low on the priority list of decisionmakers in the region, it is important to note the establishment of SAARC was preceded by the formation of a regional environmental organization. At the initiative of the United Nations Development Program, the South Asian countries—including Afghanistan and Iran—came together in 1980 and established the South Asian Cooperative Environmental Program (SACEP). The stated goal of SACEP at the time of establishment was:

to promote regional co-operation in South Asia in the field of environment—both natural and human—in the context of sustainable development and on issues of economic and social development which also impinge on the environment and vice versa; to support conservation and management of natural resources of the region and to work closely with all national, regional and international institutions, governmental and non-governmental, as well as experts and groups engaged in such co-operation and conservation efforts.³²

In its early years, SACEP was able to establish a “Regional Seas” program that had the potential to bring forth the territorial contentions for potential resolution. The interactions at a regional level through SACEP may well have helped to establish SAARC, which has a broader mandate in its charter of regional cooperation, covering a wide range of activities from energy to tourism to environmental protection, as well.

While such instances of regional cooperation are promising, the South Asian case on its own does not provide us with enough structural coherence to develop an effective strategy for moving forward with potential paths to making water an instrumental means of peacebuilding. Understanding the limitations of the current frames of policy analysis within international relations and considering alternative mechanisms for peacebuilding are important if we are to move beyond the self-fulfilling prophecy that tends to de-link environmental factors from peacebuilding.

EXPLORING FUNCTIONALITY OF WATER IN PEACEBUILDING

Political geographer Kathryn Furlong has noted that dominant theories in international relations and international organizations tend to have five key flaws: 1) a mis-theorization of hegemonic influences at work; 2) undue pessimism regarding the propensity for multilateral cooperation; 3) an assumption that conflict and cooperation exist along a progressive continuum; 4) a tenet that conflict is restricted

to state competition; and 5) a depoliticization of ecological conditions.³³ The Indus Waters Treaty exemplifies these challenges, which need to be addressed by scholars and practitioners alike. Theories of international relations that emphasize interdependence through mediating institutions such as the World Bank or the United Nations are most likely to offer some cooperative mechanisms in such asymmetric cases.³⁴

The key to analyzing environmental cooperation as a potential pathway to peacemaking is to dispense with notions of linear causality and instead consider conflict de-escalation processes as nonlinear (not having a simple cause and effect relationship), often constituting a complex series of feedback loops. Positive exchanges and trust-building gestures are a consequence of realizing common environmental threats. Often, a focus on common environmental harms (or aversions) is psychologically more successful in leading to cooperative outcomes than a focus on common benefits, which may lead to competitive behavior over the distribution of the gains.³⁵ Specific research in game theory and operations research on the potential for cooperation over water is empirically showing that there are clear behavioral responses that suggest that such cooperation is possible.³⁶

We also appear to have history on our side in this regard. An important historical study on water conflicts conducted by Oregon State University has noted that “the rate of cooperation overwhelms the incidence of acute conflict.”³⁷ In the last fifty years, only thirty-seven disputes involved violence, and thirty of those occurred between Israel and one of its neighbors. Outside of the Middle East, researchers found only five violent events, while 157 treaties were negotiated and signed.³⁸ The total number of water-related events between nations also favors cooperation: the 1,228 cooperative events are more than twice the number of 507 conflict-related events.³⁹ Of these events, 62 percent are verbal, and more than two-thirds of these were not official statements.⁴⁰

Realist scholars argue that cooperation on environmental issues among adversaries merely constitutes “low politics” and does not translate into larger resolutions over high-level national security concerns. In this view, environmental conservation would be at best a means of diplomatic maneuvering between mid-level bureaucrats, and at worst a tool for influential elites to pursue their own narrow interests. Such critics give examples of cooperation on water resources between adversarial states such as India and Pakistan or Jordan and Israel without this cooperation translating into broader reconciliation or peace.⁴¹ Thus, it is presumed by some scholars looking at large historical data sets that environmental issues are not important enough in world politics to play an instrumental role in conflict resolution. Meanwhile, recent research conducted by the International Peace Research Institute in Norway has tried to extricate some of the various geographical aspects of cooperation and conflict potential of riparian states using regression analyses. The basic conclusion of this study is that

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a shared river basin tends to accentuate conflict, but a shared river boundary as a border does not.⁴² However, such studies cannot provide the granularity of analysis required to understand how cooperative mechanisms might still operate in cases such as the Indus, where the principal cause of the overarching conflict is not water.

One of the earliest contributions to the study of environmental peacebuilding was Peter Haas' work in the context of the Mediterranean Action Plan.⁴³ Haas focused on ways in which knowledge exchange promotes environmental cooperation through the formation of what he termed "epistemic communities," networks of professional experts who arrive at shared views on scientific policy questions. These networks often take the form of civil society groups—sometimes facilitated by development donors—that exchange information on environmental issues. There is also a growing commitment from donors to "bioregionalism," the notion that ecological management must be defined by natural delineations such as watersheds and biomes rather than by national or other borders.⁴⁴ Numerous joint environmental commissions between jurisdictions and countries have taken root all over the world, at times with implicit or explicit confidence- or peacebuilding goals. This evolution has also played out at various international forums in which bioregionalism and common environmental sensitivities have sometimes transcended traditional notions of state sovereignty. An important role for such organizations is to improve an understanding of interconnections between distributive competitive issues of environmental scarcity with the mutual loss of deteriorated quality of the resource in the absence of cooperation. Through such a process it may be possible to move functionally towards using water as a means of peacebuilding in South Asia and beyond.


CONCLUSION

The Indus Basin agreement has often been heralded as a success story of riparian cooperation between warring states. The role of the World Bank as the mediating institution in resolving this dispute between India and Pakistan is often cited as a positive intervention that led to a win-win outcome for all sides in the dispute. Yet the cooperation between the two states on this technical matter has not catalyzed the resolution of the overarching conflict over the Kashmir region, giving some credence to realist assumptions about environmental factors being "low politics." A closer examination of the cooperative arrangements reveals that the cooperation may still have played an important role in deescalating tensions during times of crisis. Consequently, it is possible to link such arrangements to larger narratives of conflict over territory that may be deemed "high politics." A more positive framing of the case might reveal that water resources in this context are so important that adversaries must show some semblance of cooperation over them, even when that does not spill over into broader peace. Furthermore, the use of environmental issues

in building peace must be considered over longer time horizons and repeated interactions, premised empirically on the following conditions:

- ♦ Development of a joint information base on a common environmental threat;
- ♦ Recognition that cooperation is essential to alleviate that threat;
- ♦ A cognitive connection and trust-building from initial environmental cooperation;
- ♦ Continued interactions over time due to environmental necessity;
- ♦ Clarification of misunderstandings and de-escalation of related conflicts; and,
- ♦ Increased cooperation and resultant peacebuilding.⁴⁵

These pathways are also considered the most empirically observed mechanisms, following a collective review by policy analysts for the United Nations Environment Program.⁴⁶

The likelihood of environmental resources being used instrumentally in conflict resolution has increased in recent years. Certain environmental resources are now better understood as fundamental to basic economic, environmental and social processes, including sustaining human life. There is a growing realization that environmental issues require integrated solutions across national borders since natural ecosystems do not recognize political boundaries. At the same time, politicians need to acknowledge that natural resources, particularly those as essential as water, can provide an important tool for resolving territorial disputes as well as providing a conduit for confidence-building measures between adversaries. Cooperation over water and the environment is also a potential way of avoiding conflict if we can frame the matter appropriately. While South Asia has exemplified some parts of this framing routine, there is far more which can be accomplished if leaders are more willing to explore inherent ecological linkages between technical collaboration on water and lasting territorial security. 

NOTES

¹ Mikhail Gorbachev, "Out of Water," *Civilization* 7, no. 5 (October-November 2000).

² For a general review see Sanjeev Khagram and Saleem H. Ali, "Environment and Security," *Annual Review of Environment and Resources* (2006), 395-411.

³ The first book to propose the concept of environmental peacebuilding is Ken Conca and Geoffrey D. Dabelko, *Environmental Peacemaking* (Baltimore, Md.: Johns Hopkins University Press, 2002); further theoretical and practical development of this concept can also be found in Saleem H. Ali, "Environmental Planning and Cooperative Behavior," *Journal of Planning Education and Research* 23 (2003), 165-176; and Saleem H. Ali, ed., *Peace Parks: Conservation and Conflict Resolution* (Cambridge, Mass.: MIT Press, 2007).

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⁴ The Nadistuti sukta, “hymn of praise of rivers,” is hymn 10.75 of the Rigveda. All of the rivers in this hymn are considered “feminine” except the Indus, which is masculine and hence given a special status second only to the mythical Sarasvati River. Savarkar, among the founders of modern Hindu nationalism defines a Hindu as “a person who regards this land....from the Indus to the Seas as his fatherland (pitribhumi) as well as his holyland (punyabhumi).” As Ashutosh Varshney has noted, “the definition is thus territorial (land between the Indus and the Seas), genealogical (‘fatherland’) and religious (‘holyland’). Hindus, Sikhs, Jains, Buddhists can be part of this definition for they meet all three criteria. All of these religions were born in India. Christians, Jews, Parsis and Muslims can meet only two, for India is not their holyland.” Ashutosh Varshney, “Is Sonia Indian?” *Rediff Online* (21 April 1999).

⁵ Salman M.A. Salman and Kishor Uprety, *Conflict and Cooperation on South Asia's International Rivers: A Legal Perspective* (Washington, D.C.: World Bank Publications, 2002).

⁶ For an account of Lilienthal's career at TVA and beyond, see David Ekbladh, “‘Mr. TVA’: Grass-Roots Development, David Lilienthal, and the Rise and Fall of the Tennessee Valley Authority as a Symbol for U.S. Overseas Development, 1933–1973,” *Diplomatic History* 26, no. 3 (Summer 2002), 335–374.

⁷ Subrahmanyam Sridhar, “Indus Waters Treaty,” *Security Research Review* 1, no. 3 (2005).

⁸ Descriptive details about the Indus Basin Treaty are derived from textual information on the Transboundary Freshwater Dispute Database at Oregon State University (<http://www.transboundarywaters.orst.edu/projects/casestudies/indus.html>); for a detailed written history of the treaty, see Bashir A. Malik, *Indus Waters Treaty in Retrospect* (Lahore, Pakistan: Brite Books, 2005).

⁹ Capt. C.D. Bhatti (Ministry of Defense, Government of Pakistan, Member of the Pakistan delegation in the negotiations on Sir Creek 2000–2007), in discussion with Shaista Tabassum, 1 November 2007.

¹⁰ Oregon State University Department of Geosciences, “Indus Water Treaty,” Transboundary Freshwater Dispute Database, <http://www.transboundarywaters.orst.edu/projects/casestudies/indus.html>.

¹¹ Ibid.

¹² Ibid.

¹³ For a highly readable introduction to water utilization doctrines, see David H. Getches, *Water Law in a Nutshell* (New York: West Publishing, 1997).

¹⁴ World Bank, *Pakistan: Country Water Resource Assistance Strategy: Water Economy: Running Dry* (Washington D.C.: World Bank, 2005), 7.

¹⁵ Ibid., 8.

¹⁶ Ibid., 8.

¹⁷ Toufiq Siddiqui, “An India-Pakistan Détente: What It Could Mean for Sustainable Development in South Asia and Beyond,” *Analysis Report* 75 (Honolulu, Hawaii: East-West Center, 2004).

¹⁸ Undala Alam, “Questioning the Water Wars Rationale: A Case Study of the Indus Waters Treaty,” *Geographical Journal* 168, no. 4 (2002), 341–353.

¹⁹ Ibid., 347.

²⁰ Mohammad Sadiq, in discussion with Shaista Tabassum, 12 November 2007.

²¹ Alam, 345.

²² “Reconsidering the Indus Waters Treaty: The Baglihar Dam Dispute,” *J&K Insights* (31 January 2005), <http://www.jammu-kashmir.com/insights/insight20050101a.html>.

²³ Ibid.

²⁴ Siraj Wahid (Vice Chancellor of the Islamic University of Kashmir), interview with author, 16 May 2006, Toronto, Canada.

²⁵ Shaista Tabassum, "The Role of CBMs in Resolving Non-Military Issues between India and Pakistan: A Case Study of the Indus Waters Treaty," in *The Challenge of Confidence-Building in South Asia*, ed. Moonis Ahmer (New Delhi, India: Har-Anand Publications, 2001). The incremental role of such efforts in peacebuilding with an emphasis on psychological and cultural factors in South Asia is provided by Ranabira Samaddara and Helmut Reifdel, ed., *Peace as Process: Reconciliation and Conflict Resolution in South Asia* (New Delhi, India: Manohar Publishers, 2001).

²⁶ The question of how such treaties can address regional disparities is explored by Iftikhar Ahmed Hakim, *The Indus Waters Treaty: An Institutional Mechanism for Addressing Regional Disparity* (Los Angeles, Calif.: Masters dissertation in Urban Planning, UCLA, 2005).

²⁷ Rahul Roy Chaudhry, "Trends in the Delimitation of India's Maritime Boundaries," *Strategic Analysis* XXII, no. 10 (January 1999).

²⁸ The island formed in the estuary of the Haribhanga river on the border between India and Bangladesh, probably after the tidal and cyclone of 1970. Each of the states claims ownership of the island. For greater detail on the issue, see Kathryn Jacques, *Bangladesh, India and Pakistan: International Relations and Regional Tensions in South Asia* (New York: St. Martin's Press, 2000), 49-55.

²⁹ For a detailed analysis of linkage of the Sir Creek dispute and its potential for environmental conflict resolution, refer to a forthcoming report by Saleem H. Ali, Shaista Tabussum and Geoffrey Dabelko to the United Nations Environment Program on *Environmental Conflict and Cooperation in South Asia* (available from the author). Some of the narrative presented in this paper is also elaborated in that report.

³⁰ Krishna V. Rajan, "Nepal-India Relations," *South Asia Journal* (January-March 2005), 82-87.

³¹ The U.S. National Science Foundation funded an important effort to engage Pakistani and Indian scientists in joint research in 2005 and 2006 but both sides refused to issue visas for each other's delegates. Science was considered a more politically sensitive issue than exchange of musicians and artists who were routinely granted visas for peacebuilding activities. The efforts were widely reported in *Science* magazine. See Pallava Bagla, "Pakistan Gives Geology Conference a Cold Shoulder," *Science* 312, 1117 (26 May 2006).

³² SACEP mission statement, <http://www.sacep.org>.

³³ Kathryn Furlong, "Hidden Theories, Troubled Waters: International Relations, the 'Territorial Trap' and the Southern African Development Community's Transboundary Waters," *Political Geography* 25 (2006), 438-458.

³⁴ It is important to note that much of the recent efforts by international institutions such as the World Bank and the United Nations to provide "water for all" have come under criticism on account of being hegemonic in favoring private interests from the developed world. See Michael Goldman, "How 'Water for All' Policy Became Hegemonic: The Power of the World Bank and its Transnational Policy Networks," *Geoforum* 38 (2006), 786-800.

³⁵ Arthur Stein, *Why Nations Cooperate: Circumstance and Choice in International Relations* (Ithaca, N.Y.: Cornell University Press, 1993).

³⁶ For an example of how such behavioral models explain potential cooperation in the U.S.-Mexico case, see George B. Frisvold and Margriet F. Caswell, "Transboundary Water Management: Game Theoretic Lessons for Projects on the U.S.-Mexico Border," *Agricultural Economics* 24, no. 1 (2000), 101-111. More

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recently, Canadian researchers have also explored prospects internally for dispute resolution: Lizhong Wang, Liping Fang and Keith W. Hipel, "Basin-wide cooperative water resources allocation," *European Journal of Operational Research* (forthcoming 2008). It is also important to note that there have been considerable domestic conflicts over the Indus and its tributaries between Pakistani provinces, and the doctrine of interdependence is most well-suited in addressing those as well. See Toufiq A. Siddiqi and Shirin Tahir-Kheli, eds., *Water Conflicts in South Asia: Managing Water Resources Disputes within and between Countries of the Region* (New York: Carnegie Corporation of New York, 2004).

³⁷ Shira B. Yoffe, Aaron T. Wolf, and Mark Giordano. "Conflict and Cooperation over International Freshwater Resources: Indicators of Basins at Risk," *Journal of the American Water Resources Association* 39, no. 5 (2003), 1109-1126.

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Miriam Lowri, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin* (Cambridge, England: Cambridge University Press, 1995).

⁴² Nils Petter Gleditsch et al., "Conflicts over Shared Rivers: Resource Scarcity or Fuzzy Boundaries." *Political Geography* 25 (2006), 361-382.

⁴³ Peter Haas, *Saving the Mediterranean: The Politics of International Environmental Cooperation* (New York: Columbia University Press, 1992).

⁴⁴ Dennis Pirages and Ken Cousins, eds., *From Resource Scarcity to Ecological Security: Exploring New Limits to Growth* (Cambridge, Mass.: MIT Press, 2005).

⁴⁵ The classic works on this matter are those by Robert Axelrod, *The Complexity of Cooperation*, (Princeton, N.J.: Princeton University Press, 1997); and Robert Axelrod, *The Evolution of Cooperation*, (New York: Basic Books, 1985).

⁴⁶ United Nations Environment Program, *Understanding Environment, Cooperation and Conflict* (Washington, D.C.: Woodrow Wilson Center; and Nairobi, Kenya: UNEP, 2004), <http://www.unep.org/pdf/ECC.pdf>.