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Sharing Water, Preventing War—Hydrodiplomacy in South Asia

JAMES KRASKA

Over the past decade, scholars have closely examined the linkage between environmental change, security, and conflict. Severe deforestation, soil erosion, soil salinisation and water-logging, toxic contamination, drought and flooding, and air and water pollution are some of the environmental calamities that can increase international tension and even lead to conflict. What is perhaps more interesting, however, is that reversing the equation is also true. Environmental conservation and cooperative governance between neighbouring states can contribute to regional stability and conflict avoidance. This article suggests the international trans-boundary river agreement between India and Pakistan to manage the Indus River reduces tension and prevents war between the nuclear-armed rivals. During the Kargil crisis in 2001, for example, the trans-boundary river management regime was the most functional bilateral relationship between the two South Asian powers.

Over the past decade, scholars have closely examined the linkage between environmental change and conflict and security.¹ Severe deforestation, soil erosion, soil salinisation and water-logging, toxic contamination, drought and flooding, and air and water pollution are some of the environmental calamities that can increase regional international tension and even lead to war. Reversing the equation is also true, but this approach so far has received scant attention. Environmental conservation and co-operation can have a reverse effect and lead to improved regional stability and generate greater security.² Complementing the broad research linking environmental degradation to military insecurity, the international trans-boundary agreement between India and Pakistan to manage the Indus River tends to reduce tension and help to prevent war throughout the subcontinent.³ The positive security effects have gone unrecognised largely because the study of trans-boundary river agreements remains the domain of resource econo-

mists, water technicians and specialists, and environmental scholars, rather than those with a focus on arms control, defence policy, and international security. This article identifies and captures the international security benefits of the Indus river agreement in South Asia.

The India–Pakistan relationship is one of the few remaining wide-ranging and globally significant security complexes.⁴ The late American political scientist, Samuel Huntington, who placed India and Pakistan at the centre of his “clash of civilizations” thesis, contended that the historic competition between Hindu and Muslim in South Asia makes the region one of the most vulnerable in the world.⁵ Compounding the political dynamics, the region is wracked with over-population and environmental stress.⁶ Environmental degradation contributes to instability and increases the possibility of war on the subcontinent.⁷

Pressure on sustainable fresh water is particularly acute. As climate change threatens to place the region’s glaciers at risk, the volume of ice melt that feeds the rivers could diminish. The Himalayan glaciers form the largest body of ice outside of the polar ice caps and are the source of water for the rivers of the Indian subcontinent. The 2007 Working Group II report of the Intergovernmental Panel on Climate Change revealed: “Glaciers in the Himalaya are receding faster than in any other part of the world and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming at the current rate.”⁸ Today the problem is not that the subcontinent lacks enough fresh water, but that it is distributed unevenly. Bangladesh, for example, enjoys, and even suffers from, an abundance of fresh water, whereas parts of India and Pakistan face serious and chronic shortages.⁹ Because of the escalating environmental strain and immense and growing human populations, environmental tragedy is unfolding on the subcontinent. These trends hamper economic development and make sustainable development an elusive goal. To prevent further environmental catastrophe, India and Pakistan will have to construct a more stable security regime that widens resource cooperation.¹⁰ The trans-boundary river agreement governing the Indus can serve as a model.

River water disputes on the subcontinent are inextricably woven into the environmental and geopolitical structure of the region as a consequence of British colonialism. British colonial government institutionalised deforestation and sprawling and inefficient irrigation systems, and these developments degraded the land for more than a century. Soil erosion, water-logging, and flooding are among the serious problems that can be traced to the economic practices of the colonial era.¹¹ After the Second World War, British India was divided into its component states, producing a sub-continent geographically dominated by a hegemonic India surrounded by weaker states. War erupted between India and Pakistan over Kashmir at the time of partition in 1947–1948, along the West Pakistan–India border in 1965, and once again in

1971, when East Pakistan seceded from Islamabad's control and became Bangladesh. Relations between India and Pakistan have been cause for concern for five decades, most recently during the alarming "nuclear crises" of Spring 2002 and the bold terrorist attacks in Mumbai in December 2008.¹²

Against this backdrop of geopolitical instability is an increasing demand for river water, driven by expanding populations and desperate requirements for economic development. The environmental and economic pressures of scarce fresh water serve as an important component of the greater military condition on the subcontinent.¹³ Resource conflict is an unavoidable element of social interaction, and some measure of competition among social choices is efficient.¹⁴ The challenge, of course, is in developing peaceful mechanisms for resolving acute as well as chronic conflict before it erupts into violence. Nowhere is the challenge more compelling than in South Asia, where management and apportionment of international river flow is a fulcrum for peace or war.¹⁵

To understand the efficacy of international river agreements on confidence-building for South Asian security, it is important to place the milieu of economic, environmental and security considerations in the context of freshwater politics and human geography. There are over 260 international river basins watersheds worldwide.¹⁶ These international basins account for about 60 percent of the global river flow.¹⁷ Catchment basins cover 45.3 percent of the land surface of the Earth and affect 40 percent of the world's population.¹⁸ Immense rivers like the Indus and Ganges define the landscape, stretching for thousands of kilometres. These massive tributaries can form the spatial and functional core of a country or even a civilisation.¹⁹

Successful agricultural economies, effective public health, and industrial development are all severely undermined by a lack of access to international river water. International drainage basins naturally link riparian states into a common and interdependent fresh water system that connects the agriculture, industry, energy, and transportation sectors into an integrated regional unit. Action by one riparian may affect the quantity and quality of river water available to neighbouring states, imposing direct costs on other states in the basin. Basin nations share not just a river, but an entire ecosphere. Consequently, the potential for conflict, and the possibility of compromise and cooperation, exist side by side.

Understanding the role of international rivers informs a more complete model of geopolitics by infusing traditional notions of national security with issues of environmental protection and sustainable economic development. Environmental stress, pressure from industrialisation and agriculture, increasing population rates, and ineffective resource management all contribute to the degradation of international river water. Typically, major environmental and economic interest groups have been most effective at

promoting their agendas domestically and internationally. But these goals have tended to crowd out other elements of human security. A study by the Water and Sustainability Program of the Pacific Institute in Oakland, California concluded that a preoccupation with agricultural and economic development has ignored other equities, such as access to water for the poor, the health of the aquatic environment, and the integrity of waterside communities and cultures.²⁰

Access to the waters of international river basins throughout the Third World has generated intense competition among riparian states, as well as yielded unsung success at international cooperation.²¹ The paradox is that whilst promoting strife and gamesmanship, on the one hand, fresh water scarcity has proved to be one of humanity's most durable laboratories for building community.²² Generally, competition over river water is only one component of regional instability that threatens to erupt into interstate conflict, and such rivalry exists in South Asia.²³

Many believe that the immense environmental degradation and resource mismanagement is a contributing factor to regional violence and war.²⁴ Peter H. Gleick, for example, has built an effective model of fresh water-related conflicts derived from his exhaustive set of data on the contribution of water to international conflict.²⁵ This seminal effort promoted a deeper appreciation of the role of water as a critical component of political, military, and strategic thought. His data suggest that water may be manipulated and factored into six conflict types, and any particular conflict may fall into more than one category.

There is a convincing case that long-term national security is not possible without stabilising environmental security.²⁶ Some scholars suggest that stress on the quality and quantity of fresh water, rising populations, and increasing levels of economic development are less important factors in contributing to fresh water-related conflict than the existence of uncoordinated river development and a general animosity among riparian states.²⁷ Lack of co-ordinated governance is important. In South Asia, these trends are coalescing, threatening sustainable use and development, and thrusting the issue of access to trans-boundary river water from the domain of environmental chic into a *bona fide* issue of regional, if not global, security.²⁸

Some of the earliest agreements in modern international law reflected the inseparable linkage between river agreements, interstate politics, and international security.²⁹ The Treaty of Westphalia and the Treaty of Münster in 1648, which marked the end of the Thirty Years' War, affected much of the Rhine and Upper Danube. In addition to its well-known role as a catalyst for the formation of modern European nation-states, the Peace of Westphalia was a milestone in regional waterway governance.³⁰ Article 12 of the Treaty of Münster, for example, opened the lower Rhine to free navigation and trade, but closed the nearby Scheldt River in the Spanish Netherlands as a

concession to the merchants of Amsterdam who sought a competitive advantage over their rivals in Antwerp.³¹ These conflicting examples of the Rhine and the Scheldt Rivers represent competing legal and ideological principles of trans-boundary river management between natural law, in which rivers were held to be the property of everyone or no one, and Roman law, in which rivers were regarded as the property of the citizen and subject of the empire.³² Surveying three hundred years of trans-boundary river agreements, one scholar concluded that a focus on regional peace and stability is the paramount feature of the geopolitical context of the treaties during the period 1648–1948.³³ Indeed, the history of trans-boundary river agreements is one of incremental but steady construction of institutional capacity-building among riparian nations;³⁴ the role of such agreements as confidence building measures (CBM) is a logical enlargement of this trend.

The presence of general animosity among riparian states is more closely linked to water conflict than other factors, so the potential for trans-boundary river agreements to reduce tension is especially compelling.³⁵ In the case of the Indus Water Treaty, the introduction and management of a river agreement successfully broadens confidence and dampens military and political animosity between opposing states. This model appears to offer benefits that might be reflected in other river agreements in South Asia, and it is likely a phenomenon in South America, Asia, and Africa as well.

Instead of waiting for an overall political breakthrough prior to attempting progress on trans-boundary river issues, the procedural mechanisms that are employed in fashioning the agreements provide one element of a foundation on which to build greater regional political and strategic stability. The concept of integrating trans-boundary river agreements as one element of an overall peace process in regional conflict combines the issue of fresh water management to the greater security question. This paradigm, which is only now being recognised outside a boutique of environment security scholars, has not been widely appreciated. But the practical impact of trans-boundary water agreements as one component of building a more stable regional security framework, rather than as a centre-stage environmental treaty, augurs well for increasing cooperation along international tributaries. The environmental benefits are tertiary to the geo-political benefits. Since rivers often demarcate national borders, there is likely further opportunity to harvest the benefits of trans-boundary river co-operation in other regions.

Even without agreement on substantive issues—which generally involve water quality, water scarcity and river flow rates—areas of discussion often include regularising state practice and preventing surprise regarding damming and flow rates, introducing jointly sponsored programs to implement sustainable fishing and hunting practices, installing realistic environmental discharge controls and measures, and monitoring river traffic and non-navigational usage. There may be great progress made just by accepting the

collateral benefit of non-binding agreements regarding river management. This very modest but often more achievable success can begin to lay institutional groundwork that gently and slowly helps to ease geo-political turmoil. Rather than permitting distrust and suspicion over river resources to fuel geo-strategic conflict, trans-boundary river agreements fashion competition into workable solutions by factoring out uncertainty, surprise, and suspicion. Constructing CBMs among the parties can, over time, assist in propelling them to negotiate and implement a common river management project that builds security by producing a stability of expectations and mutual benefit.

Any type of agreement can build confidence among rivals if it serves to build common ground. This certainly does not mean that such an agreement will prevent war, but it often represents a respite from conflict with respect to one of a myriad of issues at stake. Confidence-building measures cordon off limited areas of agreement, however, thereby encouraging parties in conflict to continue to broaden these areas of commonality. But some suggest that political breakthrough has to come first:

The *sine qua non* of resolving transboundary water dispute in a protracted conflict setting is the prior resolution of the potential conflict. The history of water . . . in the Indus basin (between India and Pakistan) . . . instructs us that states involved in “high politics” conflicts that provoke wars and engage visceral issues of territorial sovereignty and the recognition of identities, are not inclined to collaborate in seemingly technical matters that concern economic development and human welfare.³⁶

In reality, dramatic advances in negotiating international river basins, whilst welcome, are not necessary to bring two parties closer. Even cases in which riparian nations merely agree to share information and exchange data, whilst agreeing to disagree on vexing substantive issues, there is increased transparency and conditions are created for confidence to emerge. The transparency generated is not perishable; it tends to spread to other aspects of the relationship. The implementation of even modest agreements serves to diminish recalcitrance on both sides. Indeed, this model of confidence-building was successfully pursued by the Super Powers during nearly five decades of the Cold War. It is interesting, then, that some scholars and practitioners would view agreements that merely build confidence but do not resolve pressing substantive issues as the “junk food” of international agreements.³⁷

Lack of information about a rival's intentions, motives, and future plans tends to generate the greatest amount of suspicion and mistrust.³⁸ When foreign relations are evenly and liberally endowed with information among the concerned parties, the ensuing transparency tends to strengthen international relationships. Transparency builds confidence and mutual confidence reduces tension. Information that builds confidence may be produced by two

strategies: verification or assurance.³⁹ Verification, also called monitoring,⁴⁰ involves the unilateral application of resources to seek out the information from others.⁴¹ Verification has become a hallmark of arms control and other international agreements. In the past, nations implemented a variety of fact-finding methods to decipher other states' actions and intentions.⁴²

Verification may involve overt mining of public data, submission of an informal diplomatic query, or even deliverance of a formal demarche, external observation of other state's activities, on-site reciprocal inspections, and covert intelligence and overhead imagery collection or other means of remote sensing. Partner nations may make agreements that greatly enhance the effectiveness of verification regimes by permitting aircraft over-flight, on-site inspection, and the broadcast of unencrypted missile telemetry for verifying ballistic missile agreements. Effective verification often requires intrusive measures, such as inspection. On-site inspection has become one of the most effective methods of verifying compliance of international agreements, but it has rarely been employed outside the context of conventional and nuclear military arms control due to state sensitivities regarding sovereignty.⁴³ With the attribution of trans-boundary river agreements to the political and military stability of the basin, however, there is greater promise to extend the benefits of traditional arms control verification mechanisms such as on-site inspection and remote sensing to environmental agreements.⁴⁴

Assurance is a strategy whereby each nation gathers and provides information about itself to other states.⁴⁵ Under assurance, nations have an affirmative obligation to deliver to partner states useful, specific information. This information may include otherwise confidential internal documents, physical evidence, or simple or complex certifications.⁴⁶ Participating in assurance or acquiescing in active monitoring conveys to the other parties that one is complying with one's obligations. Assurance is interactive; states recognise their partner nations' legitimate information needs, and they manifest a clear willingness and capability to provide that information. In receiving assurances, regional states set forth the parameters of the scope and type of the information they are seeking to obtain.⁴⁷ This consultative element towards assurance tends to broaden and deepen the relationship between the parties because it generates unscripted interaction.

Procedures designed to produce assurance need not be elaborate and may consist merely of self-reporting. Self-reporting is a simple and widespread process in which a state gathers and presents evidence about its activities to other states. Reporting has become a common element of international treaties and environmental agreements.⁴⁸ Increasingly, such reporting in the context of an environmental treaty is subject to independent review or assessment of state compliance by an international organisation created

under the agreement for that purpose.⁴⁹ Both verification and assurance strategies are designed to alleviate the information shortfall that is a constant feature of international tension. By filling the void in information, verification and assurance eases the fears harboured by perceived disadvantage whilst providing some measure of restraint to states that may have an advantage. Verification and assurance can be especially powerful along international rivers because they bring full disclosure of ecological, economic, and navigational uses of the river throughout the river basin.⁵⁰

Procedural compliance concerns fulfilling one's obligation of process-oriented matters such as attending scheduled meetings, filing appropriate reports, and using established mechanisms for implementing the agreement.⁵¹ Substantive compliance is focused on fulfilling specific physical obligations. These obligations go to the heart of the agreement, such as capturing or releasing river flow that has an impact on a lower riparian.⁵² Whilst the focus on most analysis regarding international agreements is quite correctly placed disproportionately on substantive compliance, procedural compliance produces considerable independent benefits. Procedural compliance, however, within the context of rival or hostile neighbours can begin to construct bilateral arrangements for peacefully working out differences. Successfully pursued and implemented, procedural compliance tends to feed on itself, leading to broader and deeper interaction between nations that are parties to an agreement. Both substantive compliance and procedural compliance are distinct from effectiveness, which concerns whether the agreement is achieving the goals it has established. One could assess an individual state's substantive and procedural compliance—whether the state is carrying out the obligations to which it agreed—independently from determining whether an agreement is meeting its objectives.⁵³

From this vantage of geo-strategy, the tertiary benefit of the effective management of a river basin biosphere is collateral. The benefits of sustainable development and environmental management are real enough, but the greatest service to both economic development and the environment may be in the ability of international agreements to contribute to stability and divert energies away from war. This approach introduces a new tool for addressing persistent regional conflict in South Asia—and likely elsewhere—by applying a time-tested formula that has been effectively employed by the Super Powers and the United Nations. Regional conflicts often appear to be intractable, with a final resolution a distant and elusive goal.

The Indus treaty regime was intentionally designed to limit cooperation to narrowly defined areas.⁵⁴ India views itself under threat from one or another combination of Islamic, Chinese, or small regional Powers; and some Indians see their country surrounded by a sea of extremist Muslims.⁵⁵ Threat perceptions rotate among the United States–Pakistan counter-terrorism

alliance, fear of a Sino–American condominium that sidelines India, and extremist Muslim infiltration of the Indian Muslim minority in the wake of the Mumbai terrorist attacks.⁵⁶ Pakistan's central explanation for tensions on the sub-continent are simple: since its creation, Pakistan has been a bulwark to resist the concerted attempt by India to use its overwhelming size, military capabilities, and economic power to dominate Pakistan and establish regional hegemony.⁵⁷

The core cause of the Indo–Pakistan conflict is what Stephen Cohen described as a “paired minority” conflict in which both Indians and Pakistanis are driven by a fearful cognitive psychology.⁵⁸ In paired minority conflicts, each side sees itself as the vulnerable entity exposed to continuous attack from more powerful outsiders.⁵⁹ It is extraordinarily difficult for either side to make concessions in such a security environment, even on trivial matters, because doing so may be seen as confirming others' perceptions of one's own weakness, inviting still further demands. Resistance to compromise sets in because compromise may be seen at home as a sign of weakness or, worse, of collaboration with the enemy.⁶⁰ The result is that the foreign ministries and diplomatic corps responsible for negotiations in each country atrophy, losing a creative capacity for solving bilateral problems.⁶¹ The model of paired minority conflict also explains why India and Pakistan are willing to push relations to the brink of war over what outsiders might view as the irrational. Minority states feel that the rules of behaviour are relaxed for them because their very existence and identity are at stake.⁶² “Their struggle is a form of total war, not limited conflict. Any means, fair or foul, may be used because the enemy has destruction in mind.”⁶³ As a consequence of a paired minority conflict, India and Pakistan do not have widespread opportunities to build co-operation and develop structures generating mutual confidence.

Both India and Pakistan experienced post-partition traumas that cemented their feeling of minority states under siege: for India, the defeat by China in 1962 was the watershed; for Pakistan, its 1971 humiliation by India.⁶⁴ By the early 1970s, when the United States and China began their strategic condominium to contain the Soviet Union, Pakistan gravitated towards China, heightening suspicion in New Delhi. Consequently, the diplomatic gains of earlier generations of Indian and Pakistani leaders—figures like Mahatma Gandhi, Sardar Patel, Mohammed Ali Jinnah, and Jawaharlal Nehru—became impossible to extend. As early as the 1950s, India and Pakistan had reached agreements on trade, transit, hotlines, and other confidence building measures.⁶⁵ Since 1971, however, their animosity has become deeply entrenched, highlighting a lack of progress in diplomacy and confidence-building over the past three decades. However, a new generation of more sophisticated and worldly military officers and diplomats in Pakistan and India is emerging.⁶⁶ Largely free of blaming their countries' misfortunes on the experiences shaped in the Cold War, these professionals

are driven less by personal hatred of the other side.⁶⁷ Driven by realism, fresh approaches to economics, and an understanding of the catastrophic consequences of nuclear war, this new generation represents more fertile ground that could embrace and capitalise on new approaches to finding peace.

The first major international river conflict between the two states arose over bilateral competition for the waters of the Indus River. Derived from the Sanskrit word *sindhu*, meaning “river” or “stream,” “Indus” is the source of the name of the country of India. The Indus begins 17,000 feet above sea level in Tibet, winding 1,800 miles through the Himalayas in Jammu and Kashmir before emptying into the Arabian Sea. The waterway has a total drainage basin area of about 450,000 square miles, encompassing much of the territory in both Pakistan and India. The river’s annual flow is about 272 billion cubic yards—207 billion cubic meters—twice that of the Nile and three times the Tigris and Euphrates combined. Under British rule, the largest irrigation system in the world was constructed throughout the Indus Basin. After Pakistan and India achieved independence, the unified approach to the basin brought conflict between the two nations, with headwaters belonging to India, and canals running to Pakistan.

Pakistan no doubt feels vulnerable to Indian mischief regarding the Indus, fuelled by a general obsession over fears of being dominated by Delhi.⁶⁸ Most analysts contend that Pakistan’s exposure does not approach the desperately alarmist position described by David Lilienthal. A former chairman of the Tennessee Valley Authority, Lilienthal proclaimed fifty years ago that Pakistan’s dependence on India’s control of the Indus was absolute. “No army, with bombs and shellfire, could devastate a land as thoroughly as Pakistan could be devastated by the simple expedient of India’s permanently shutting off the sources of water that keep the fields and people of Pakistan alive.”⁶⁹ Following the partition of the Indian subcontinent in 1947, a dispute arose over the waters of the Indus when India cut off the flow to some Pakistani canals at the start of the summer irrigation season.⁷⁰ The disagreement simmered until it was successfully resolved in 1960. The conclusion of the Indus Water Treaty, made possible by funding and engaged diplomacy by the United States and the World Bank, re-ordered and stabilised hydro-politics throughout the basin.⁷¹

Under this the agreement, India was afforded control of the eastern rivers of Ravi, Sutlej, and Beas; Pakistan was granted control over the western rivers Indus, Jhelum, and Chenab. Pakistan was allocated 81 percent of the Indus’ waters. The treaty also established a system of conflict resolution by first having Indian and Pakistani Water Commissioners resolve emergent crises. Only when these bodies failed would a dispute be referred to an arbitral court or neutral expert. Such referral has never occurred.⁷² After the agreement was signed, a period of transition followed in which each Power developed its irrigation infrastructure system to adhere to the treaty.⁷³ Thus as India was partitioned, so

were the waters of the Indus divided. In addition to a simple division of river flow, the agreement calls on both parties to exchange flow data for rivers, canals, and streams and to submit disputes to the permanent Indus Water Commission and International Court of Arbitration.⁷⁴ As each Power complies with its water quotas, this system of checks and inspections ensures that no harm will come to the water quantity or quality of the rival nations.

The agreement permits India, the upper riparian Power, to use the flowing water, but any construction that facilitates storage or diversion of river water is prohibited. Pakistan has feared that India could disturb the flow of the Jhelum by building a dam in India that would disrupt the Pakistani irrigation pattern—flooding it when water was not required and withholding flow when water was most needed. Central and southern Punjabi agriculture depend both on the Jhelum's water. If India restricted flow, it could make a large part of the Punjab barren—but it would take at least 15 years for India to build such a dam.⁷⁵ Pakistan has also raised concern that India could divert the flow of the Chenab to Ravi to use the river as a weapon. The Chenab is only 50 kilometres from the Ravi River on the Indian plain; if India dug a canal to connect the two waterways, it could consume the entire flow of the Chenab to expand its irrigation network into the Rajasthan desert.⁷⁶ Either action would unilaterally abrogate the treaty. As the economic and engineering costs would be exorbitant and the political costs unacceptably high, India has not been inclined to violate the treaty. Since many in Pakistan would view river diversion as an act of war,⁷⁷ India could expect Pakistan to retaliate against Indian dams.⁷⁸

After forty years, the Indus Water Treaty has survived remarkably intact despite two wars—in 1965 and 1971—and the threat of numerous clashes and crises that make the sub-continent the most likely place in the world for a nuclear war.⁷⁹ The Indus Commission has successfully resolved controversies and disputes that surfaced over this period of time. Each Rival Power has respected the provisions of the agreement by fulfilling their responsibilities and, by being cautious, not politicising the arrangement or militarising the system of dams, hydroelectric facilities, canals, and water treatment and distribution facilities throughout the basin.⁸⁰ Although the original treaty foresaw an era of joint planning and cooperation for developing the river, the two Powers have not exploited the full potential for mutual or cooperative development.⁸¹ Consequently, the provisions for basin-wide inspection and monitoring have become the most important sections of the treaty. Even though the agreement has not blossomed as was hoped, it has been able to serve as a stabilising mechanism between the two competitors.

The experience of reaching the agreement has nourished other bilateral talks, including two near-breakthroughs on the volatile issue of the Siachen glacier, which was spoiled each time at the last minute by political pusillanimity on both sides.⁸² Adherence to the Indus treaty, as well as the role the agreement plays as a mechanism for building confidence between Pakistan

and India, was tested in Spring 2002. Despite the threat of impending border conflict fuelled by Muslim terrorism and militancy in Kashmir, Indian and Pakistani representatives met in Delhi late May 2002 for the annual Indus Water Commission bilateral meeting.⁸³ Convening amid a charged political atmosphere and threat of war, the commission proceeded in a business-like fashion and discussed routine issues such as hydroelectric plans.⁸⁴ At a time when the two Powers were literally mobilising for what many viewed as an inevitable war in June 2002, the Indus Water Commission was steadfastly ironing out practical differences along the river. The relationship between India and Pakistan in the Commission was the most functional element of the bilateral relationship.

Bringing together a network of middle-level regulators, resource and economic experts, educators and scientists, and diplomats and military officers develops a dense web of relationships across the border. These partnerships constitute a new bureaucratic trans-governmental order, a phenomenon that Anne-Marie Slaughter has termed "The Real New World Order."⁸⁵ In "The Real New World Order," *ad hoc* trans-governmental networks bypass the traditional state hierarchy to more closely integrate states by expanding horizontal co-operation amongst government officials from different nations, non-governmental organisations, and regional actors. Whilst serving to construct a "new" world order of civil relationships, the Indus agreement continues to spin-off substantive economic, environmental, and security benefits that promote sustainable development. The agreements influenced India, despite its vantage of political and military strength, to deal with its neighbours largely on the basis of equality. Situated both in the enviable position of upstream riparian as well as vulnerable downstream riparian, Delhi has had to simultaneously work agreements from both perspectives. In doing so, it has reduced regional suspicion and avoided inflaming regional insecurities.

In many areas of the world, water scarcity and conflict may be closely linked to a lack of co-operation between Powers over shared fresh water resources.⁸⁶ The strategic geography of the Indus basin, much like that of the Jordan, Nile, and Euphrates, tends to promote disputes over water scarcity. But along the Indus, bilateral co-operation on shared trans-boundary rivers effectively ameliorates water scarcity as a cause of conflict.⁸⁷ The Indus agreement has shown utility beyond merely dampening disputes over water scarcity; it has also served more generally as a confidence and security-building mechanism.

NOTES

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1. See generally, Thomas Homer-Dixon, *Environment, Scarcity and Violence* (Princeton, NJ, 1999), Thomas Homer-Dixon and Jessica Blitt, eds., *Ecoviolence: Links Among Environment, Population and Scarcity* (Lanham, MD, 1998), Gunther Baechler, "Why Environmental Transformation Causes Violence:

A Synthesis," *Environmental Change and Security Project Report*, Vol. 4 (1998), pp. 24–44; Nils Petter Gleditsch, ed., *Conflict and the Environment* (Dordrecht, 1997).

2. For one study that does acknowledge a correlation between improving the environment and enhancing regional security, see Richard A. Matthew with Asif Zaidi, "People, Scarcity and Violence in Pakistan," in Richard Matthew, Mark Halle and Jason Switzer, eds., *Conserving the Peace: Resources, Livelihoods and Security* (International Institute for Sustainable Development and the International Union for the Conservation of Nature (IUCN), 2002), pp. 57–88 at 62.

3. The term CBM was first used in the Organization for Security and Cooperation in Europe's basket I of the 1975 Helsinki Final Act, where states agreed to certain measures designed to reduce the dangers of armed conflict and miscalculation or misunderstanding of military activities which could give rise to apprehension. This article uses the traditional term "confidence building measure" [CBM] and the newer term "confidence and security building measure" [CSBM] synonymously.

4. See generally, Barry Buzan and Gowher Rizvi, eds., *South Asian Insecurity and the Great Powers* (New York, 1986). The India–Pakistan relationship is best described as a "security complex" because it is long-lasting and multi-dimensional. Nuclear theorists can disagree on whether the introduction of nuclear capabilities on the subcontinent may serve to stabilise or destabilise the security situation. It is clear, however, that the potential for devastating consequences from war have increased greatly. The Natural Resources Defense Council estimates that a nuclear war between Pakistan and India would result in 12 million deaths. See, <http://www.nrdc.org/nuclear/southasia.asp>.

5. Samuel Huntington, "The Clash of Civilizations?", in Zakaria Fareed, ed., *The New Shape of World Politics* (New York, 1997), pp. 67–91, at 67 and 77.

6. Norman Myers, *Ultimate Security: The Environmental Basis of Political Stability* (New York, 1993), pp. 101–103.

7. Hassan Shaukat, "Environmental Issues and Security in South Asia," *Adelphi Papers*, Vol. 262 (Autumn 1991).

8. Intergovernmental Panel on Climate Change, *Impacts, Assessments and Vulnerability, IPCC Fourth Assessment Report* (2007), p. 493, available at www.ipcc.ch/ipccreports/ar4-wg2.htm.

9. Arun P. Elhance, *Hydropolitics in the Third World* (Washington, DC, 1999), p. 8.

10. Jerome Delli Priscoli, "Water and Civilization: Using History to Reframe Water Policy Debates and to Build a New Ecological Realism," *Water Policy*, Vol. 1 (1998), pp. 623–636 at 626.

11. Richard A. Matthew with Asif Zaidi, "People, Scarcity and Violence in Pakistan," in Richard Matthew, Mark Halle and Jason Switzer, eds., *Conserving the Peace: Resources, Livelihoods and Security* (World Conservation Union, 2002), pp. 57–88 at 68.

12. Thom Shanker, "12 Million Could Die at Once in an India–Pakistan Nuclear War," *New York Times*, 27 May 2002, www.nytimes.com/2002/05/27/international/asia/27NUKE.html; Luke Harding and Richard Norton Taylor, "India Alert as Nuclear War Looms," *Guardian*, 1 June 2002, www.guardian.co.uk/kashmir/Story/0,2763,725968,00.html.

13. See generally, Peter H. Gleick, "Water and Conflict: Fresh Water Resources and International Security," *International Security*, Vol. 18 (Summer 1993), pp. 79–112; Christopher L. Kukuk and David A. Deese, "At the Water's Edge: Regional Conflict and Cooperation Over Fresh Water," *UCLA Journal of International Law and Foreign Affairs*, Vol. 1 (Spring 1996), pp. 21–64.

14. Evita Schmiege, "Crises Prevention: Lessons for Developing Cooperation," in Bonn International Center for Conversion, Brief 16, *Practical Disarmament* (August 2000), pp. 10–15 at 10.

15. The terms "international river" and "transboundary river" are used interchangeably to mean rivers that border on or flow through two or more nations.

16. This study uses the terms "international river basin" and "international river watershed" interchangeably to mean the entire catchment and drainage basin of a river that is shared by two or more states. See, James L. Wescoat, Jr., "Beyond the River Basin: The Changing Geography of International Water Problems and International Water Law," *Colorado Journal of International Environmental Law and Policy*, Vol. 3 (Winter, 1992), pp. 301–332.

17. Aaron T. Wolf, *Transboundary Waters: Sharing Benefits, Lessons Learned*, Thematic Background Paper, International Conference on Fresh water, Bonn, Germany, 2–7 December 2001, at p. 1. The number of international river basins has expanded from 214 listed in 1978, with the growth attributable to the reorganisation of the state system in Europe following the breakup of the Soviet Union and Yugoslavia, as well as to improved mapping technology. Ibid.

18. Aaron T. Wolf, *Transboundary Waters: Sharing Benefits, Lessons Learned*, Thematic Background Paper, International Conference on Fresh water, Bonn, Germany, 2–7 December 2001, at p. 1.

19. Priscoli, "Water and Civilization," p. 623.

20. P.H. Gleick, A. Singh, and H. Shi, *Emerging Threats to the World's Fresh water Resources. A Report to the Pacific Institute for Studies in Development, Environment and Security* (Oakland, CA, 2001), pp. 2–3 and 51. In some areas of South Asia, more than three-fourths of the population lack access to clean drinking water or adequate water-related sanitation. Worldwide, such shortages lead to over three million deaths per year. *Ibid.*, pp. 5–8. Waterborne disease invades international watersheds in Asia and Africa, with malaria alone afflicting 300–500 million people each year and killing more than 2 million. Tom Carter, "DDT: Malaria's Answer in Africa?", *Washington Times*, 16 June 2002, p. A1.

21. This article focuses on nations throughout Central and South Asia, which may be described as part of the "Third World." The term "Third World"—"Tiers Monde" in French—was initially coined by the French demographer Alfred Sauvy in 1952 to draw an analogy from the "third estate." The third estate describes the commoners in France before and during the French Revolution, comprised of the priests and nobles, respectively. The term was adopted by the 29 African–Asian nations at the Conference in Bandung, Java, Indonesia in 1955 and came to denote those nations neutral of the ideological divide during the Cold War. See "The Asian Language," *Asiaweek*, 5 March 1999, p. 70. Because the areas of South Asia encompass immense diversity of culture, economic development and natural resources, as well as political systems, the term "Third World" is an incomplete, if not inaccurate description. On the Third World as a collective, see generally, John Ravenhill, "The North-South Balance of Power," *International Affairs*, Vol. 66 (1990), pp. 731–748.

22. Priscoli, "Water and Civilisation," p. 626.

23. In 1980, Egyptian President Anwar el-Sadat said, "If Ethiopia takes any action to block our right to the Nile waters, there will be no alternative for us but to use force": cited in Norman Myers, "Environment and Security," *Foreign Policy*, Vol. 74 (Spring 1989), p. 32.

24. See generally, Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from the Cases," *International Security*, Vol. 19 (Summer 1994), pp. 5–40; *idem.*, "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security*, Vol. 16 (Fall 1991), pp. 76–116.

25. Peter Gleick, "World Water Conflict Chronology," Pacific Institute for Studies in Development, Environment, and Security, 2000: www.worldwater.org/conflict.html.

26. See generally, Lothar Brock, "Security through Defending the Environment: An Illusion," in Elise Boulding, ed., *New Agendas for Peace Research: Conflict and Security Reexamined* (Boulder, CO, 1992), pp. 79–102; Bruce Byers, "Ecoregions, State Sovereignty and Conflict," *Bulletin of Peace Proposals*, Vol. 22 No. 2 (1991), pp. 65–76; and Robert D. Kaplan, "The Coming Anarchy," *Atlantic Monthly*, (February 1994), pp. 45–76.

27. Dr. Aaron T. Wolf *et al.*, "Transboundary Fresh water Dispute Database," undated study briefing available at: www.transboundarywaters.orst.edu/database/.

28. Gary Hart, Warren Rudman *et al.*, *U.S. Commission on National Security in the 21st Century* [Hart-Rudman Commission], Supporting Research and Analysis, *The Phase I Report on the Emerging Global Security Environment for the First Quarter of the 21st Century, New World Coming: America Security in the 21st Century* (15 September 1999), p. 16; The White House, *A National Security Strategy for a New Century* (December 1999), p. 13.

29. One of the most useful and perhaps the most exhaustive catalogue for such agreements is the Transboundary Fresh Water Dispute Database, a project of the Department of Geosciences at Oregon State University in collaboration with the U.S. Institute of Peace, the World Bank, the University of Alabama, and other individuals and institutions. The database, which references 3,600 water-related treaties since the ninth century, contains over 150 full-text transboundary fresh water treaties and detailed negotiating notes on case studies: www.transboundarywaters.orst.edu/database/.

30. James L. Wescoat, Jr., "Main Currents in Early Multilateral Water Treaties: A Historical-Geographic Perspective, 1648–1948," *Colorado Journal of International Environmental Law and Policy*, Vol. 39 (1996), pp. 49–50.

31. *Ibid.*, citing Clive Parry, *The Consolidated Treaty Series XII* (1969), p. 76.

32. *Ibid.* See also generally, Eugene F. Ware, *Roman Water Law* (1905).

33. Wescoat, Jr., "Early Multilateral Water Treaties," p. 71.

34. *Ibid.*, p. 72.

35. The data, which is owned and compiled by Professor Aaron T. Wolf, Oregon State University, may be viewed at: www.transboundarywaters.orst.edu/database/.

36. Miriam R. Lowi, "Political and Institutional Responses to Transboundary Water Disputes in the Middle East," *Environmental Change and Security Project Report 2* (Spring 1996), pp. 5–8, at p.6.

37. Joseph S. Nye, Jr., "Arms Control After the Cold War," *Foreign Affairs* (1989/1990), pp. 42–46.
38. See, Lilly R. Sucharipa-Behrmann and Thomas M. Franck, "Preventive Measures," *NYU Journal of International Law and Policy*, Vol. 485 (Spring/Summer, 1998), pp. 486–492.
39. Kenneth W. Abbott, "Trust But Verify: The Production of Information in Arms Control Treaties and Other International Agreements," *Cornell International Law Journal*, Vol. 26 (Winter 1993), p. 1.
40. The terms "verification" and "monitoring" have been used interchangeably in arms control and are used interchangeably here. Stefan Oeter, "Inspection in International Law: Monitoring Compliance and the Problem of Implementation in International Law," 28 *Netherlands Yearbook of International Law*, Vol. 164 (1997), p. 106.
41. Kenneth W. Abbott, "Trust But Verify: The Production of Information in Arms Control Treaties and Other International Agreements," *Cornell International Law Journal*, Vol. 26 (Winter 1993), pp. 1, 4.
42. See Robert J. Einhorn, "Treaty Compliance," *Foreign Policy*, Vol. 45 (Winter 1981–82), p. 30.
43. See generally, William R. Moomaw, "International Environmental Policy and the Softening of Sovereignty," *Fletcher Forum of World Affairs* Vol. 7(21) (1997), p. 7.
44. Remote sensing has been used for military reconnaissance and arms control verification, beginning in the Cold War. During the 1960s, remote sensing became a tool of the scientific community, collecting information on the Earth's weather patterns, monitoring natural resources, environmental surveys and land use planning and the study of erosion. It has been suggested that remote sensing be utilized for monitoring multilateral environmental agreements. See generally, Allison F. Gardner, "Environmental Monitoring's Undiscovered Country: Developing a Satellite Remote Monitoring System to Implement the Kyoto Protocol's Global Emissions-Trading Program," 9 *NYU Environmental Law Journal*, Vol. 9 (2000), pp. 152, 192–194.
45. Kenneth W. Abbott, "Trust But Verify: The Production of Information in Arms Control Treaties and Other International Agreements," *Cornell International Law Journal*, Vol. 26 (Winter 1993), pp. 1, 4.
46. *Ibid.*
47. *Ibid.*, p. 29.
48. Kamen Sachariew, "Promoting Compliance with International Environmental legal Standards: Reflections on Monitoring and Reporting Systems," 2 *Yearbook of International Environmental Law*, Vol. 2 (1991), pp. 31, 40.
49. Michael Bothe, "The Evaluation of Enforcement Mechanisms in International Environmental Law," in Rudiger Wolfrum, ed., *Enforcing Standards: Economic Mechanisms as Viable Means*, Vol. 13 (1996), p. 22.
50. Lilly R. Sucharipa-Behrmann and Thomas M. Franck, "Preventive Measures," *NYU Journal of International Law and Policy*, Vol. 30 (Spring/Summer, 1998), pp. 485, 492–493.
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57. *Ibid.*
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75. Ahmad Fraz Khan, "Chenab, Jhelum vulnerable to Treaty Mischief: Indian Minister's Threat," *DAWN*: www/dawn.com, Sunday, 26 May 2002. *DAWN* is Pakistan's largest English-language newspaper daily.
76. Ibid.
77. Anonymous official from the Ministry of Water and Power in Pakistan, as reported in Ibid.
78. Dams are not lawful targets under the customary law of war, but such observance might be reciprocal in a major war between the two nuclear states. See Arts. pp. 56-58, Protocol I Additional to the Geneva Conventions of 1949, 1125 *UN Treaty Series* 3, adopted June 8 1977 at Geneva and reprinted in W. Michael Reisman and Chris T. Antoniou, eds., *The Law of War* (1994), pp. 91-93.
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83. Because India had severed travel links between the two countries, the Pakistani delegation had to travel to Delhi via Dubai. *BBC News, South Asia*, "Water Treaty Withstands Wars," (Thursday, 30 May 2002, 16:32 GMT).
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