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ARTICLES

An Examination of the International Environmental Law Governing the Proposed Indian River-Linking Project and an Appraisal of Its Ecological and Socio-Economic Implications for Lower Riparian Countries

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CONTENTS

I.	Introduction	210
II.	The Indian River-Linking Project and Its Likely Impacts	211
	A. Project Description	211
	B. Likely Environmental and Socio-Economic Impacts of the Project on Bangladesh	213
III.	International Law Governing International Rivers	217
	A. Principles of International Law and “General” International Environmental Law	217
	B. Specific Principles Governing International Rivers—Traditional Approaches	220
	C. Specific International Law Instruments Governing International Rivers—Recent Trends	223
	D. Specific Principles Governing International Rivers—International Case Law	226
IV.	The Project’s Actual and Anticipated Breaches of International Law	228
V.	EIA, State Participation, and Co-operative Management of the Project	231
	A. Environmental Impact Assessment	231
	B. State Participation and Cooperative Management of the Project	233
VI.	Conclusion	235

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I. INTRODUCTION

With the hope of overcoming the chronic problems of floods during the monsoon and drought in the dry season, since as early as the 1970s India has planned to artificially link the major international rivers that flow across its territory.¹ The proposed Indian River-Linking Project (“River-Linking Project” or “Project”) involves the diversion of massive quantities of water from major international rivers, including the Ganges and the Brahmaputra. Following a decision of the Indian Supreme Court in 2002, construction of the River-Linking Project is now well underway.²

Bangladesh is a co-riparian state with India and is located downstream of the Indian portions of the Ganges and Brahmaputra rivers. The Bangladeshi Government has expressed its grave concern over the potential impacts of the Project on both the economy and environment of Bangladesh.³ The proposed scheme has created new and substantial tensions between the two nations. Water diversions by India are likely to have a serious impact on Bangladesh’s access to and use of fresh water; the outcome of the Project has the potential to be an unprecedented man-made disaster for natural ecosystems and human health in Bangladesh. Many members of civil societies in both India and Bangladesh are now apprehensive of the scheme’s viability and its likely detrimental effects.⁴ The controversy surrounding the Project and the likely magnitude of its impacts is such that the Project is now a matter of serious international concern.

The substantive portion of this article is divided into four parts. Part II introduces the Indian River-Linking Project and examines its likely impacts on the ecology, society, and economy of downstream Bangladesh. Part III presents a summary of the major principles of international law regarding the management and regulation of international rivers. In presenting such an overview, this Part examines relevant soft-law instruments, binding treaty provisions, and jurisprudence of the International Court of Justice (ICJ) in determining the rights and obligations of riparian states in sharing and utilizing the common water of international rivers. Part III also outlines the responsibility and liability of riparian states, such as India, for their action in diverting the waters of international rivers, causing serious detriment to the use and rightful share of co-riparian states such as Bangladesh. Part IV seeks to draw together aspects from the

1. See Jayanta Bandyopadhyay & Shama Perveen, *Doubts over the Scientific Validity of the Justifications for the Proposed Interlinking of Rivers in India*, SCI. & CULTURE, Jan.-Feb. 2004, at 7.

2. See Record of Proceedings in Writ Petition (Civil) no. 512/2002 In Re: Networking of Rivers (Oct. 31, 2002), in THE MINDLESSNESS CALLED RIVER LINKING PROPOSALS, 4 (South Asia Network on Dams, Rivers & People 2003), available at <http://www.sandrp.in/riverlinking/ilrprpsl.pdf>.

3. *Dhaka's Concern over Delhi's River Inter-Linking Project*, Bangladesh Sangbad Sangstha, BSS: NAT'L NEWS AGENCY OF BANGL., Aug. 13, 2004, available at <http://www.bssnews.net/index.php?genID=BSS-13-2003-10-26&id=7>.

4. See, e.g., Dhruva Adhikary, *India's Thirst Leave Neighbors Gulping*, ASIA TIMES, Mar. 26, 2004, available at http://www.atimes.com/atimes/South_Asia/FC26Df05.html.

preceding two parts to highlight the Indian River-Linking Project's actual and anticipated breaches of a whole array of established international law principles. Finally, Part V examines some of the procedural aspects of the River-Linking Project, specifically with regards to the principles of international environmental impact assessment (EIA) and state cooperation. Once again, Part V concludes that the Project flagrantly violates various binding and non-binding principles of international law, particularly with regards to cooperative involvement of co-riparian states in the decision making processes concerning international rivers. Ultimately, this article concludes that the current secretive and unilateral stand of India is seemingly not subsumable in international environmental law, fails to apply key tenets of sustainable development including the precautionary principle and holistic resource management, and completely falls short of India's legal obligation to respect the rights of its co-riparian, Bangladesh.

II. THE INDIAN RIVER-LINKING PROJECT AND ITS LIKELY IMPACTS

A. PROJECT DESCRIPTION

In 2002, the Supreme Court of India, in response to a writ petition (civil no. 512/2002), authorized the interlinking of Indian rivers with a view to the diversion of a huge amount of water from major international rivers.⁵ There are two components of the Project. The first component aims to link fourteen Himalayan rivers in northern India. The aim of the second component is to connect sixteen peninsular rivers in southern India, including the Ganges and the Brahmaputra.⁶ The diversion of flows in these latter two rivers is of special interest to Bangladesh as it draws massive amounts of water from their tributaries in upstream Nepal, and the rivers ultimately empty into the Bay of Bengal after passing through Bangladesh.

India is aiming to complete this ambitious Project within ten years at an estimated cost of more than US\$118 billion.⁷ However, according to Bandyopadhyay, Indian large scale water projects frequently have a cost overrun of around 400 to 500 percent.⁸ Therefore, it is foreseeable that the final cost of the Project could exceed US\$500 billion. In terms of progress that has been made on the Project, it is noteworthy that almost two dozen dams on the Brahmaputra in

5. Record of Proceedings in Writ Petition (Civil) no. 512/2002 In Re: Networking of Rivers, *supra* note 2, at 4.

6. This includes, among others, the river basins of Mahanadi, Godavari, Krishna, Pennar, Cauvery, Vaigai, the west-flowing rivers of Kerala, Karnataka, north of Bombay and south of Tapi, and southern tributaries of Yamuna. See National Water Development Agency, *NWDA Proposals*, <http://nwda.gov.in/indexmain.asp?linkid=87&langid=1> (last visited Nov. 20, 2006).

7. *River-linking Project: Non-resident Indians in US Ready to Offer Necessary Help*, THE BANGL. OBSERVER, Aug. 7, 2005, available at <http://www.bangladeshobserveronline.com/new/2005/08/07/front.htm>.

8. Jayanta Bandyopadhyay, South Asian Consortium for Interdisciplinary Water Resource Studies, *And Quiet Flows the River Project*, <http://www.saciwaters.org/Jayanta.html> (last visited Nov. 20, 2006).

the northeast are already in the advanced stages of construction and planning.⁹

India has carefully designed the rivers interconnection plan after carrying out necessary surveys and preparing feasibility reports in 1987. India proposed to interlink the Ganga and the Cauvery in 1972 and created the National Water Development Authority in 1982, with the primary objective of interlinking national rivers.¹⁰ After many unsuccessful attempts and much scrutiny, the ruling National Democratic Alliance of India formulated the National Water Policy in 2002.¹¹ It appointed a Special Task Force to supervise the interlinking of the Indian rivers in 2002.¹² India has already approached various international financial institutions to help fund the Project. Mr. Suresh Prabhu, Chairman of the Special Task Force, has visited the United States and met with Texas Governor Rick Perry to seek technical and financial assistance for the Project. Apparently, Texas agreed to be a partner in implementing the Project.¹³ Mr. Suresh Prabhu has reportedly been assured financial assistance for the Project through the U.S. Agency for International Development (USAID) and the World Bank.¹⁴ Notwithstanding these developments, India has yet to serve any notice or inform Bangladesh about the intention of building the proposed Project. As will be discussed in Part V, should India continue to pursue the Project without the knowledge and consent of Bangladesh, it would have the effect of contravening the established procedural rules of international law that ensure the fairness of a development project in international rivers.

The Project's primary objective is to ensure adequate water supply for domestic, industrial, and agricultural use and improve water flow, food security, and aquatic navigation in India. The scheme will also create jobs for rural people and help counter the mass migration of people from rural to urban areas.¹⁵ Further, India reasons that the Project will reduce flood and drought conditions in the northern and southern parts of India and generate hydropower and irrigation. The Project represents an unprecedented bid for India to ensure its internal water security. This Project, if completed successfully, is likely to provide an additional

9. Dulal C. Goswami & Partha J. Das, *The Brahmaputra River, India*, *ECOLOGIST ASIA*, Jan.-Mar. 2003, available at <http://www.kalpavriksh.org/f1/f1.3ed%20ecologist%20folder/Brahmaputra-Goswami.doc>.

10. Shobha Warriar, *Persons Behind The Project: NRIs Keen on River Linking Project*, Sustainable Development Networking Programme Bangladesh, http://www.sdnbd.org/river_basin/persons_behind/nri_ready.htm (last visited Oct. 12, 2006).

11. Government of India Ministry of Water Resources, National Water Policy (2002), <http://wrmin.nic.in/policy/nwp2002.pdf> (last visited Oct. 7, 2006).

12. Jayanta Bandyopadhyay & Shama Perveen, *The Interlinking of Indian Rivers: Some Questions on the Scientific, Economic and Environmental Dimensions of the Proposal*, http://www.sdnbd.org/river_basin/differntviews/documents/jayanta1.pdf (last visited Oct. 7, 2006).

13. Shobha Warriar, *Persons Behind The Project: Interview with Sockalingam 'Sam' Kannappan*, Sustainable Development Networking Programme Bangladesh, http://www.sdnbd.org/river_basin/persons_behind/canappan.htm (last visited Oct. 7, 2006).

14. See Warriar, *supra* note 10.

15. See National Water Development Agency, *Inter Basin Water Transfer: The Need*, <http://nwda.gov.in/index2.asp?sublinkid=46&langid=1> (last visited Nov. 15, 2006).

thirty-five to thirty-seven million hectares of irrigated land and permit the generation of a further 34,000 billion kilowatts of electricity.¹⁶ However, as the following section will explore, from an international point of view, the benefits India may reap from the Project's completion are likely to be dwarfed in comparison to the monumental harm that will be suffered by Bangladesh's environmental, economic, and social well-being.

B. LIKELY ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS OF THE PROJECT ON BANGLADESH

According to official Bangladeshi Government documents, "[w]ater is central to the way of life in Bangladesh,"¹⁷ and the protection of the nation's water resources is absolutely vital for maintaining the well-being of the ever-growing population which is now well in excess of 120 million.¹⁸ Being downstream of India and at the delta of the two mighty international rivers, the Ganges and the Brahmaputra, Bangladesh bears the full brunt of monsoon floods every year and severe drought during the dry months.

Even before the River-Linking Project has even been completed, the ongoing operation of the Farakka barrage in India for the diversion of the Ganges water immediately before its entry into Bangladesh is a major contributor to the current problem of too much and too little water in Bangladesh. The Farakka barrage has been a bone of contention between India and Bangladesh ever since the commission of the barrage in 1975. If the Farakka experience is any guide, it is easy to surmise the potential adverse consequences that the Indian River-Linking Project will have on the economy, ecology, biology, and sustainable development of Bangladesh.

Recent studies on India's proposed River-Linking Project have identified a number of possible adverse effects on Bangladesh. Some of the most significant of these impacts include:¹⁹

- Massive change in sediment transport due to reduction and redistribution of water flow;
- Reduction of flow of the tributaries in the northwest region and consequent shrinking of wetlands in the region;

16. Adhikary, *supra* note 4.

17. See Ministry of Water Resources, *National Water Policy of Bangladesh*, Sustainable Development Networking Programme Bangladesh, http://www.sdnbd.org/river_basin/waterpolicy/water_policy_bangladesh.htm (last visited Oct. 7, 2006).

18. U.N. Conference on Trade and Dev., *An Investment Guide to Bangladesh: Opportunities and Conditions* (2000) 27, available at <http://www.unctad.org/en/docs/poiteit29.en.pdf>.

19. Interview by NIRAPAD with Jahir Uddin Chowdhury, Professor, Bangladesh University of Engineering and Technology (Jan. 2004), http://nirapad.org/care_nirapad/Home/Interview/html/jan2004/ (last visited Oct. 7, 2006) [hereinafter Chowdhury Interview].

- Reduction of inflow to the distributaries in the north-central, southwest and south-central regions;
- Advancement of tidal propagation further upstream;
- Increase in the salinity intrusion into the Lower Meghna, which would create risks of salinity intrusion in the south-central and north-central regions;
- Increase in the frequency of very large and very small floods;
- Intensification of river bank erosion, siltation of river bed, and extensive char formation;
- Increase in scarcity of water during dry season;
- Decrease in the recharge to the wetlands and groundwater in the wet season;
- Lowering of ground water level;
- Massive scale drain out of water from *beels* in the northwest region and *haors* in the northeast region; and
- Release of water from the reservoirs of Brahmaputra during heavy rainfall would increase the risk of high magnitude floods. In 2000, the southwest region of Bangladesh experienced such flood due to release from the reservoirs in West Bengal.

The impacts of the Project on Bangladesh are somewhat atypical in that they are likely to result in an increase in the detrimental effects of both flood and drought. For example, as a result of this Project, it is likely that more than 483,409 people will be displaced.²⁰ At the other end of the spectrum, scientists have calculated that even the barest minimum of a ten to twenty percent reduction in river flows caused by the Project will be enough to dry up vast areas of Bangladesh, threatening the livelihoods of more than 100 million people and having catastrophic effects on the economy and levels of development.²¹

Under the current proposal, "India wants to divert 173 billion cubic meters of water per year from the Brahmaputra, amounting to 193,703 cubic feet per second."²² This rate of extraction is greater than the total flow volumes in the Brahmaputra River during the dry season.²³ Such a drastic reduction in flow rates will affect many irrigation projects in rural Bangladesh that are dependent on the Brahmaputra for their water supply. The Brahmaputra also helps to control salinity because of its natural capacity to flow during the dry seasons. Correspondingly, the reduction of water in the Brahmaputra is likely to result in a significant increase in salinity levels. The very existence of the Bangladeshi portion of the

20. Md. Khalequzzaman, Puneet Srivastava & Fazlay S. Faruque, *The Indian River-Interlinking Project: A Geologic, Ecological, and Socio-economic Perspective*, <http://www.lhup.edu/mkhalequ/Research/Indian%20River-linking%20Project.ppt> (last visited Nov. 20, 2006).

21. John Vidal, *India's Dream, Bangladesh's Disaster*, THE GUARDIAN, July 24, 2003, available at <http://www.countercurrents.org/en-vidal240703.htm>; see also Editorial, *India's Mega Water Offensive*, DAILY STAR, Aug. 22, 2003, available at <http://www.thedailystar.net/2003/08/22/d30822020121.htm>.

22. MD. KHALEQUZZAMAN, *HISTORIC PERSPECTIVES OF THE INDIAN RIVER LINKING PROJECT*, Nov. 8, 2003, http://www.e-mela.com/Bangladesh/River_Indian_History_Khalequzzaman20031108.html (last visited Oct. 7, 2006).

23. *Id.*

Brahmaputra appears to be threatened, and there is a definite possibility of the Indian scheme leaving its co-riparian neighbor with a totally dry river bed.

All aspects of the natural environment of Bangladesh are closely linked to its water resources. Continuous and consistent flow in the rivers is fundamental for the protection, restoration, and preservation of the environment and biodiversity.²⁴ Increased soil erosion, sedimentation, and salinity are all likely impacts of the Project and will almost certainly result in the loss of endangered species and coastal zone habitat.²⁵ The lack of sufficient water in major river basins will severely affect natural water bodies such as *beels*, *haors*, and *baors*, which are linked to rivers through *khals* and used for fish production and development. This situation will pose a threat to the survival of many fishermen who preserve a significant portion of water in the dry season and provide a habitat for the aquatic flora.²⁶ These water bodies also help transfer the wastes discharged from domestic sources through the *khals* into the rivers' natural drainage system.²⁷ Reduction in the flow of water in the rivers will dry them up, destroying the natural fisheries and aquatic environment, and blocking the flow of wastes into the drainage system.

In the proposed plan, the Farakka-Sundarban is another linked canal. It has been argued that "there is a possibility to withdraw water from the Ganges in the dry season in addition to [what is] currently being diverted by Farakka Barrage to ensure the navigability of the Kolkata Port India."²⁸ Should this apprehension eventuate, the southwestern region of Bangladesh will suffer further from the loss of water diversion. The possible environmental impacts of the River-Linking Project will be the slow death of the Bangladeshi segments of *all* successive international rivers that flow from India. This eventuality may not be gainsaid in view of the current situation with the Farakka barrage. For example, under the status quo, according to Bangladeshi forest officials, "about seventeen percent of the total Sundari trees of the Sundarbans, the world's largest estuarine swamp, have already fallen prey to the top-dying syndrome due to increased salinity."²⁹ The Farakka-Sundarban component of the Indian River-Linking Project will further exacerbate this ongoing tree-dying syndrome. It is also likely that coastal industries such as fisheries will be forced out of business due to undesirable changes in the biophysical and environmental conditions of the estuary caused by

24. See generally Ministry of Water Resources, *National Water Policy: Bangladesh*, ¶ 4.12, http://www.sdnbd.org/sdi/international_days/water_day/2005/content/water_policy.htm (last visited Oct. 7, 2006) (giving background information).

25. See *id.*

26. Chowdhury Interview, *supra* note 19.

27. See Ministry of Water Resources, ¶ 4.13, *supra* note 24.

28. Chowdhury Interview, *supra* note 19.

29. Inam Ahmed & Aasha Mehreen Amin, *Bangladesh Waiting for a Miracle*, 1996, available at http://www.sdnbd.org/river_basin/bangladesh/bangladesh_waiting_for_miracle.htm.

the Project.³⁰ Further, the intrusions of salinity will render the ground water contaminated and undrinkable, causing further scarcity in pure drinking water and a dire threat to public health.

Scientists predict that the Indian River-Linking Project will upset the hydrological cycle by changing the directions of natural flows, the sediment load composition, and the nature of the river mouth delta.³¹ It has been predicted:

Construction of dams and canals will get villages dislocated, flood towns and cut through millions of hectares of agricultural land. The large network of dams and canals will also alter natural drainage such that occasional flooding and waterlogging will inundate millions of hectares of agricultural land. Moulding of natural flood-water will reduce land fertility gradually and over the years the fertile land will change into desert, affecting agricultural production.³²

The Indian River-Linking Project will irreparably alter natural ecosystems by an unnatural modification of the hydrological cycle through the use of canal systems, and it will seriously affect biological diversity by upsetting the natural equilibrium. Such extensive geomorphic changes will greatly increase the probability of microbial and infectious diseases because of the lack of water in areas where it was once present, thereby increasing the already inadequate levels of sanitation of the malnourished and poverty-stricken people who will become displaced.

The significant problem for Bangladesh is that diversions of the Ganges and other affected rivers will occur entirely within India's borders.³³ Even though Bangladesh may account for only eight percent of the Ganges-Brahmaputra-Meghana basin, its hydrological catchments encompass eighty-eight percent of the country's total area of 147,000 square kilometers.³⁴ Therefore, future water diversions by India are likely to have a serious and widespread impact on Bangladesh's access to and use of fresh water as a lower riparian country, and will further lead to the use of water by the population from unsafe sources.

If even a fraction of the anticipated impacts on the ecological, economic, and social health of Bangladesh eventuate, the Indian River-Linking Project has the potential to be an unprecedented man-made disaster for natural ecosystems and human health. The harm that the above-mentioned impacts will have on the people of Bangladesh is even more worrisome considering that half the nation's population already lives below the poverty line.³⁵ In terms of the environmental

30. *Id.*

31. Imran Ali, *Interlinking of Indian Rivers*, 86 CURRENT SCI. 498, 499 (2004).

32. *Id.*

33. J. S. A. BRICHERI-COLOMBI, COULD BANGLADESH BENEFIT FROM THE RIVER-LINKING PROJECT?, http://www.ben-center.org/ConfPapers_2005/Brichieri.doc (last visited Oct. 7, 2006).

34. A.K. Azad et al., *Potential Impacts of Indian River Linking Plan on the Ecosystem of the Sundarbans*, www.ben-center.org/ConfPapers_2005/Azad1.doc (last visited Nov. 20, 2006).

35. WORLD BANK GROUP, *POVERTY IN BANGLADESH: BUILDING ON PROGRESS* (2002), <http://siteresources>.

impacts Bangladesh faces, if the Project proceeds as planned, it is reasonable to assert that widespread destruction of ecosystems and the extinction of unique coastal, riparian, and aquatic species are among the likely consequences. Further, an increase in the frequency and magnitude of extreme natural events such as drought and flood will almost certainly occur in large areas affected by the Project.

III. INTERNATIONAL LAW GOVERNING INTERNATIONAL RIVERS

International law governs the utilization of common rivers in order to ensure the just and equitable share of waters for all competing claimants and interests. It confers specific rights and imposes definite obligations on riparian states so that their legitimate rights are protected and the abusive exercise of supposed rights is prevented. Adherence to this orderly normative regime of the rightful and proper utilization of common water resources is indispensable not only to ensure fairness and equity but also to avoid overexploitation. This Part of the article examines the rights and obligations of the riparian states in sharing and utilizing their common waters of international rivers. It outlines the responsibility and liability of a riparian state, such as India, for its action in diverting the waters of international rivers causing serious detriment to the use and rightful share of co-riparian states, such as Bangladesh.

Several different sources of international environmental law that establish the rights and duties of co-riparian states are examined in this part. Section (A) discusses some relevant principles that can be deciphered from the broader body of international law, including the major “generic” international environmental law treaties such as the Rio Declaration. Section (B) outlines the traditional approaches to the regulation of international rivers and the underlying rationales behind these approaches. Section (C) examines recent trends in the reform of principles governing the management of international rivers. Section (D) outlines some of the international case law principles on the regulation of international rivers that have been espoused by the ICJ and other such tribunals. Overall, the aim of Part III is to demonstrate that international law governing transboundary rivers is now an established body of principles from a variety of different, yet equally valid, sources that can be readily applied to the Indian River-Linking Project.

A. PRINCIPLES OF INTERNATIONAL LAW AND “GENERAL” INTERNATIONAL ENVIRONMENTAL LAW

One of the fundamental principles of international law is that the holder of a right must exercise it in a manner not injurious to others. It corresponds to the

Roman law proverb *sic utere tuo ut alienum non laedas*, which translates to, “you use your own so as not to injure another.” This obligation requires a state not to use its territory and resources to the detriment of another state. This foundational tenet of international law naturally extends to the management and exploitation of international rivers.

The United Nations recognizes and fosters mutual respect among its members, particularly those which are neighbors. To this end, the U.N. Charter embodies the general principle of good-neighborliness, due account being given to the interests and well-being of the rest of the world in social, economic, and commercial matters.³⁶ This is precisely the objective of international economic cooperation under Chapter IX of the U.N. Charter.³⁷ All U.N. members pledge themselves in Article 56 of the U.N. Charter to attain this objective through individual and collective efforts. The expression, “pledge,” entails a precise legal obligations for U.N. member states. Relying on this principle, it has been argued that a lower riparian country like Bangladesh “may demand the continuation of the full flow of [water] from an upper riparian state, free from any diminution in quantity or quality.”³⁸

The 1972 Stockholm Conference served as a catalyst for several of the most significant international environmental initiatives undertaken and is often described as the birthplace of the concept of sustainable development.³⁹ In outlining a more globally focused concept of individual state sovereignty than was perhaps previously widely accepted, the Stockholm Declaration on the Human Environment recognized that states have sovereign rights to exploit their own resources pursuant to their own environmental policies. They also have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.⁴⁰

This principle of restricted state sovereignty has subsequently been reiterated in other major international environmental law instruments, including the 1992 Rio Declaration on Environment and Development,⁴¹ at the 2002 Johannesburg Earth Summit,⁴² and in the 1992 Convention on Biological Diversity.⁴³

36. U.N. Charter art. 74.

37. U.N. Charter art. 55.

38. Aaron Schwabach, *Diverting the Danube: The Gabčíkovo-Nagymaros Dispute and International Freshwater Law*, 14 BERKELEY J. INT'L L. 290, 326 (1996).

39. World Bank Group, International Environmental Conventions, http://www.worldbank.org/legal/legen/legen_je.html (last visited Oct. 7, 2006).

40. Report of the United Nations Conference on the Human Environment, Stockholm, Swed., June 5-16, 1972, *Action Taken by the Conference*, 4, U.N. Doc. A/CONF.48/14/Rev.1 (1973).

41. United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, June 14, 1992, U.N. Doc. A/CONF. 151/5/Rev.1, *reprinted in* 31 I.L.M. 874.

42. World Summit on Sustainable Development, Johannesburg, S. Afr., Sept. 4, 2002, *Declaration on Sustainable Development* [hereinafter Earth Summit 2002].

43. Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

Beyond issues of a state's sovereign right to exploit the resources located within its territories, the need for integrated and holistic management of global environmental resources has been increasingly recognized within the international sphere. In the specific context of co-riparian states, James Kraska highlights the inseparable interdependence of any river system:

International drainage basins link riparian states into a common and interdependent freshwater 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 neighboring 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.⁴⁴

Fortunately, the need for such a holistic approach has been codified in the most significant contemporary international environmental law instruments. The Rio Declaration adopts an integrated approach to the management of shared water resources, emphasizing that "long term development of global freshwater requires holistic management of resources and a recognition of the interconnectedness of the elements related to freshwater and freshwater quality."⁴⁵ The Rio Declaration further explains the interconnectedness and organic unity of river systems in the following words: "the complex interconnectedness of freshwater systems demands that freshwater management be holistic (taking a catchment management approach) and based on a balanced consideration of the needs of people and the environment."⁴⁶ Long before the elucidation of these principles at Rio, the 1977 Report of the U.N. Water Conference in Mar del Plata, Argentina emphasized that "it is necessary for states to cooperate in the case of shared water resources in recognition of the growing economic, environmental, and physical interdependencies across international frontiers."⁴⁷

Ranging from soft law declarations to deeply enshrined customs, there are numerous important precepts within the wider body of international law and "general" international environmental law that are directly applicable to the regulation of transboundary river systems. Perhaps most significant is the fact that the longstanding principle of state sovereignty has been subjected to some important legal restraints in recent decades. Further, the need to holistically manage rivers on the basis of natural catchments rather than according to arbitrary national borders has been explicitly acknowledged at major global

44. James Kraska, *Sustainable Development Is Security: The Role of Transboundary River Agreements as a Confidence Building Measure (CBM) in South Asia*, 28 YALE J. INT'L L. 465, 581 (2003).

45. Report of the United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 13-14, 1992, *Resolutions Adopted by the Conference*, ¶ 18.36, U.N. Doc A/CONF 151/26/Rev.1 (Vol. 1) (1993).

46. *Id.*

47. Report of the United Nations Water Conference, Mar del Plata, Arg., Mar. 14-25, 1977, *Decisions of the Conference*, 53, U.N. Doc. E/CONF.70/29 (1977).

forums such as the landmark 1992 Rio Earth Summit.

B. SPECIFIC PRINCIPLES GOVERNING INTERNATIONAL RIVERS—TRADITIONAL APPROACHES

Three and a half centuries ago, a Dutch scholar in international law, Hugo Grotius, articulated the principle of absolute territorial sovereignty on rivers. Grotius characterized rivers, regardless of their international status, as “the property of the people through whose territory it flows, or the ruler under whose sway that people is . . . to them all things produced in the river belong.”⁴⁸ This notion of sovereignty over international rivers certainly favors upper riparian states more often than not at the expense of lower riparian states. Such a historical rationale suggests that an upstream state can use its territorial water in whatever manner it deems appropriate and without any consideration of the effects of such uses on the lower or co-riparian states. This was precisely the legal opinion rendered by U.S. Attorney General Judson Harmon as a justification for the diversion of the Rio Grande River in 1895, leaving little water for Mexico, the downstream state.⁴⁹ The Harmon Doctrine was based on the notion of absolute sovereignty of riparian states. Understandably, this is the preferred position of upstream powerful riparian states, such as the United States, Austria, and India in negotiations on river disputes. The United States asserted this absolute right in its disputes with Mexico over the sharing of the Rio Grande and Colorado Rivers and with Canada over the Columbia River. Austria made a similar claim in relation to the sharing of the Rissbach River with Bavaria.⁵⁰ India pursued its absolute claim as a justification for the construction of Farakka barrage on the Ganges River in 1961. India maintained that “the construction of such a dam is ‘the natural right of any country,’” and that “any water collected behind the dam belongs exclusively to the country that collected it.”⁵¹

In reality, the claim of absolute territorial sovereignty over common rivers is no more than a legal fiction, and even its proponents have never practiced it unconditionally.⁵² For example, the United States compromised its position in

48. HUGO GROTIUS, *DE JURE BELLI AC PACIS LIBRI TRES*, VOL. 2, CH. 2, § 12 (Francis Kelsey trans., 7th ed., 1646) (cited in Aaron Schwabach, *Diverting the Danube: The Gabcikovo-Nagymaros Dispute and International Freshwater Law*, 14 BERKELEY J. INT'L L. 290, 325 (1996)).

49. This doctrine was originally proposed by the Attorney General of the U.S. Judson Harmon, in 1895 to justify the U.S. position of allocating the water of the Rio Grande River between the U.S. and Mexico. 21 Op. Att'y Gen. 274 (1895); *Diversion of Waters*, 1 MOORE DIGEST § 132, at 654.

50. Dr. Gieseke, the Director of the Institute of Water Rights at Bonn University, made this claim. See Clyde Egleton, *The Use of the Waters of International Rivers*, 33 CAN. BAR REV. 1018, 1020 (1955).

51. Joseph W. Dellapenna, *The Two Rivers and the Lands Between: Mesopotamia and the International Law of Transboundary Waters*, 10 BYU J. PUB. L. 213, 230-31 (1996); Scott L. Cunningham, *Do Brothers Divide Shares Forever? Obstacles to the Effective Use of International Law in Euphrates River Basin Water Issues*, 21 U. PA. J. INT'L ECON. L. 145 (2000).

52. Eduardo Jimenez de Arechaga, *International Legal Rules Governing Use of International Watercourses*,

resolving all disputes over the sharing of common rivers with Mexico and Canada through the conclusion of international agreements conceding the legitimate and rightful shares of co-riparian states.⁵³ Similarly, Austria resolved its dispute with Bavaria on the basis of mutual recognition of rights by concluding a treaty in 1948.⁵⁴ Further, India resolved its Indus River dispute with Pakistan by concluding a treaty in 1960, which duly recognized the right of Pakistan in the Indus water.⁵⁵ The conclusion of the Farakka barrage commissioning agreement in 1975 and subsequent agreements on the sharing of the Ganges water with Bangladesh in 1977, 1982, 1985, and 1996 may be cited to the same effect.

An examination of past conflicts reveals that in the context of transboundary water resources, it has always been implicit that a right to water is a usufructuary right and not a right of absolute ownership. "The right to the use of this water and to the fruits of that use never included the right to waste, destroy, or fully consume the resource."⁵⁶ However, it is important to note that most of the traditional principles of international law regarding the use of transboundary water resources developed prior to the environmental concerns that began to emerge from the 1972 Stockholm Conference.⁵⁷

The doctrine of "equitable use" is arguably the most longstanding and settled principle of international law governing international rivers. This doctrine establishes that states shall utilize optimally, equitably, and reasonably the watercourse in their respective territories. The traditional equitable use doctrine was first codified by the Helsinki Rules on the Uses of Waters of International Rivers ("Helsinki Rules"). The Helsinki Rules affirm that the right of a riparian state to its international rivers is limited to the extent that a riparian state has the right "within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin."⁵⁸ Article V of the Helsinki Rules specifies an inclusive list of factors that need to be taken into account to determine what constitutes a state's "reasonable and equitable share." These factors include climate, geography, and hydrology of the basin, past and present

2 INTER-AM. L. REV. 329, 330 (1960).

53. For all these agreements, see U.N. Legislative Series, *Legislative Texts and Treaty Provisions Concerning the Utilisation of International Rivers for Other Purposes Than Navigation* 232-59, U.N. Doc. ST/LEG/SER.B/12 (1963).

54. P. SEVETTE, LEGAL ASPECTS OF THE HYDRO-ELECTRIC DEVELOPMENT OF RIVERS AND LAKES OF COMMON INTERESTS 49, U.N. Doc. E/ECE/136 (1952).

55. F. J. Berber, *The Indus Water Dispute*, INDIAN Y.B. OF INT'L AFF., 1957, at 46. For the text of the treaty, see Indus Waters Treaty, Pak.-India, Sept. 19, 1960, 419 U.N.T.S. 125, *reprinted in* 55 AM. J. INT'L L. 797 (1961).

56. Berlin Conference on Water Resources Law, 2004, *Revision of the Helsinki and Other International Law Association Rules on International Water Resources*, art. 7, available at <http://www.asil.org/ilib/WaterReport2004.pdf> [hereinafter Berlin Conference].

57. *Id.* pt. 2.

58. Int'l Law Ass'n, Helsinki Rules on the Uses of the Waters of International Rivers and Comments, *Report of the Fifty-Second Conference* 484, art. IV (1966) [hereinafter Helsinki Rules].

uses of the waters, economic and social needs of each basin state, population dependent on the waters of the basin in each basin state, cost of alternative means, availability of other resources, avoidance of unnecessary waste, and practicability of compensation to other co-basin states as a means of adjusting conflicts among uses. The Helsinki Rules adopt a "substantial injury" test/standard in determining whether the use of common water by a state is reasonable and equitable.⁵⁹ The evolving role and nature of the Helsinki Rules are discussed further in the following section.

The doctrine of equitable use is also expressed in other major international environmental law instruments such as the Convention on the Law of the Non-navigational Uses of International Watercourses ("Convention on Non-navigational Watercourses"). Article 5 of the Convention establishes that:

Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present Convention.⁶⁰

In a similar vein to the criteria originally espoused in the 1966 Helsinki Rules, under the Convention on Non-navigational Watercourses, what constitutes an equitable use is determined by: geographic, hydrographic, hydrological, climatic, ecological, and other factors; social and economic needs of watercourse states involved; population dependent on the watercourse of watercourse states; effects of use of the watercourses in one watercourse state on other watercourse states; existing and potential uses of the watercourse; conservation; and availability of alternatives of comparable value to a particular planned or existing use.⁶¹

Article 7 of the Convention on Non-navigational Watercourses embodies the principle of "no significant harm" and affirms the duty of watercourse states to take all appropriate measures while utilizing international watercourses in their territories to prevent the causing of significant harm to other watercourse states. The Convention also establishes that in the event a state is harmed, the offending state shall take appropriate measures in consultation with the affected state or states to eliminate such harm and to discuss the issue of compensation if necessary.

As the following section will explore, above and beyond the traditional approach of equitable use, it is now a basic rule of customary international law that states must strive to achieve the ecologically sustainable use of waters and

59. *Id.* art. V.

60. Convention on the Law of the Non-navigational Uses of International Watercourses, G.A. Res. 51/229, art. 5, U.N. Doc. A/51/49 (May 21, 1997).

61. *Id.* art. 6.

other resources.⁶² This represents a shift in the traditional thinking of international water law, which previously focused on the development of water resources for consumptive uses.⁶³ The traditional application of the multiple use philosophy has enabled the exploitation of water resource use and development by states. Their aggressive pursuit of economic prosperity while maintaining their unsustainable consumptive patterns, through the diversion and damming of environmental flows and the perpetuation of inefficient and unsustainable land management practices, requires even greater diversions of water to meet present needs. Hence, the traditional doctrine of equitable use actually results in increased waste, as the supposedly “optimal and reasonable use” for the further development of water resources has often been based on little more than the supply that is needed to prop up existing inefficiencies in water transmission and usage.

C. SPECIFIC INTERNATIONAL LAW INSTRUMENTS GOVERNING INTERNATIONAL RIVERS—RECENT TRENDS

The development of international environmental law in the past fifteen or so years has been marked by growing international concern over the size of the world’s population and its impact on the scarcity of finite resources, particularly fresh water. It has been estimated that by 2025 1.8 billion people will live in countries or regions with absolute water scarcity, including large parts of India.⁶⁴ With the growing concern in the international community over the increasing scarcity of water resources, it has become widely recognized that the principles of sustainable development need to be effectively integrated and reconciled with the settled doctrine of equitable use. As discussed above, this doctrine has not traditionally promoted or supported environmental conservation and protection.

While the principle of equitable use has not yet been displaced, international environmental law has evolved such that there are now additional factors that must be considered when determining what is “reasonable” within the doctrine of equitable use.⁶⁵ As a result of recent reforms one can no longer determine whether a particular use is equitable and reasonable without examining that use in an integrated context.⁶⁶ Thus, the overarching principle of sustainable development seeks to reconcile the conflicting norms of developmental, environmental, and vital human needs through its integration with the equitable use doctrine in

62. Helsinki Rules, *supra* note 58, art. VI.

63. Joseph W. Dellapenna, *Foreword: Bringing The Customary International Law of Transboundary Waters Into the Era of Ecology*, 1 INT’L J. GLOBAL ENVTL. ISSUES 243, 243 (2001).

64. C.P. KUMAR, NAT’L INST. OF HYDROLOGY, FRESH WATER RESOURCES: A PERSPECTIVE (2003), available at www.angelfire.com/bc/nihhrrc/documents/fresh.html.

65. A. Dan Tarlock, *Safeguarding International River Ecosystems in Times of Scarcity*, 3 U. DENV. WATER L. REV. 231, 241 (2000).

66. Helsinki Rules, *supra* note 58, art. VI.

international water law.⁶⁷

In 2004, the International Law Association completed the revision of the 1966 Helsinki Rules. These reforms represented “a major development of the rules relating to water resources, integrating the traditional rules regarding transboundary waters with rules derived from the customary international environmental law and international human rights law that apply to all waters.”⁶⁸ Hence, the revised Helsinki Rules now outline several key legal norms that are generally considered by the international community to be legally binding obligations. In effect, the revised Helsinki Rules may be considered as a progressive development and codification of customary international law with regard to sustainable development under paragraph 109 of the 1997 Programme of Action for Further Implementation of Agenda 21.⁶⁹

The principle expressed in Article 4 of the Helsinki Rules endorsing Recommendation 6(2) of the Bonn Declaration essentially emphasizes the fact that “[h]uman rights cannot be secured in a degraded or polluted environment.”⁷⁰ It has also been said, “it is time to recognize that those who pollute or destroy the natural environment are not just committing a crime against nature, but are violating human rights as well. Such an approach would also protect the most vulnerable in society.”⁷¹

This human rights-based approach to international environmental law has also begun to emerge in the context of international rivers. For example, the International Law Association now perceives that any denial by a basin state of the rights of co-basin states to the equitable sharing of water uses “conflicts with the community of interests of all basin states.”⁷²

It is vital to note that the convergence of contemporary international environmental law concepts, such as adaptive and integrated ecosystem management, with the settled equitable use doctrines of international transboundary water law is still in its early stages of development. The infancy of such an updated, sustainability-based approach is largely due to the fact that “there is nothing to require that States when using water—even equitably and reasonably—must

67. See Patricia K. Wouters & Alistair S. Rieu-Clarke, *The International Water Law Resource Institute*, University of Dundee, *The Role of International Water Law in Promoting Sustainable Development*, http://www.xiamenacademy.org/download/Wouters/wouters_rieuclarke.pdf (last visited Nov. 20, 2006).

68. Berlin Conference, *supra* note 56, pt. 2.

69. U.N. DEPT. OF ECONOMIC AND SOCIAL AFFAIRS, DIV. OF SUSTAINABLE DEVELOPMENT, *AGENDA 21 EARTH SUMMIT: UNITED NATIONS PROGRAM OF ACTION FROM RIO (1992)*, available at <http://www.un.org/documents/ga/res/spec/aress19-2.htm>.

70. DONNA CRAIG, *INTERCONNECTEDNESS BETWEEN HUMAN RIGHTS, THE ENVIRONMENT AND INDIGENOUS PEOPLES* (June 2005), <http://www.law.mq.edu.au/MUCCEL/craig/Indig.Human%20Rts.DTP.2006.doc> (last visited Oct. 7, 2006).

71. *Id.*

72. SLAVKO BOGDANOVIC, *INTERNATIONAL LAW OF WATER RESOURCES* 114 (Patricia Wouters & Serguei Vinogradov, eds., 2001).

conform themselves to the mandates of international environmental law.”⁷³ However, according to the International Law Association, under the revised Helsinki Rules, a question of what is a reasonable and equitable use shall first be determined on the basis of allocating waters to satisfy vital human needs.⁷⁴ Further, this rule is qualified so as to exclude water needed to support general economic activity. However, such activities need to be balanced against the needs of other basin states and the obligations of ecological integrity and sustainable development.⁷⁵ Thus, questions of reasonable and equitable use also entail due consideration of the principles of sustainability (water necessary to assure ecological flows or otherwise to maintain ecological integrity),⁷⁶ minimization of environmental harm,⁷⁷ and avoidance of transboundary harm.⁷⁸ Provided, of course, all concerned nations are party to the revised Helsinki Rules, these provisions apply to states acting jointly as well as individually.⁷⁹

The revised Helsinki Rules also establish that transboundary watercourse states, such as India and Bangladesh, shall endeavor to achieve conjunctive management. Conjunctive management involves managing the waters of a drainage basin *as a whole*, through a regime that takes into account the interconnections of surface and subsurface waters within the drainage basin.⁸⁰ Such a holistic approach is endorsed by the International Law Association of The Johannesburg Declaration on Sustainable Development.⁸¹ This principle was also stated in the New Delhi Declaration on Principles of International Law Relating to Sustainable Development (2002).⁸² As such, the Helsinki Rules (2004) has recognized that the principle of “integration” is central to sustainable development generally.

Article 8 of the revised Helsinki Rules is commendable in its acknowledgment that “the obligation to minimize environmental harm must take into account both harms to water and harms caused by using water.” However, in terms of the enforceability of such a provision, it is noteworthy that the International Law Association has indicated that the duty to minimize environmental harm could only extend to one of “due diligence” or a duty to take “appropriate measures.”

73. Int’l L. Ass’n, Water Resources Committee, *Berlin Conference (2004): Water Resource Law, Fourth Report* 16 (2004), available at <http://www.ila-hq.org/pdf/Water%20Resources/Final%20Report%202004.pdf> [hereinafter *Helsinki Revised*].

74. *Id.* arts. 12, 13.

75. *Id.* art. 14.

76. *Id.* art. 7.

77. *Id.* art. 8 (endorsing paragraph 1.3 of the New Delhi Declaration).

78. *Id.* art. 14.

79. *Id.* art. 9.

80. *Id.* art. 5.

81. See Earth Summit 2002, *supra* note 42.

82. Int’l L. Ass’n, *ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development*, 2 April 2002, 2 INT’L ENVTL. AGREEMENTS: POL., L. & ECON. 211, 213 (2002) [hereinafter *New Delhi Declaration*].

These revised Helsinki Rules that prescribe international customary law with regard to transboundary waters are applicable to India and Bangladesh as they are transboundary watercourse states. Even though India and Bangladesh have signed a treaty for the sharing of the Ganges at Farakka, this agreement regulates only part of the water that they share within the Ganges-Brahmaputra-Meghna basin. Therefore, they have not signed an agreement for the sharing of the remaining common rivers that are to be dammed and diverted by the Indian River-Linking Project, nor are they signatories or contracting parties to the Convention on Non-navigational Watercourses. Thus, the emerging principles of sustainable development, environmental protection, and human rights to water within the doctrine of equitable use, as espoused by the International Law Association under the revised Helsinki Rules, are applicable to both India and Bangladesh. These rules will be applied in a dispute between two of the transboundary states if it arises for determination and settlement in the ICJ. These rules would also apply in the event that the existing 1996 Ganges treaty was reinterpreted in light of emerging international environmental concerns and customary law and norms.

D. SPECIFIC PRINCIPLES GOVERNING INTERNATIONAL RIVERS—INTERNATIONAL CASE LAW

There exists a range of national and international judicial decisions and arbitral awards in support of the principle that no state can use its territory to the detriment of another. Some of these international judicial expositions of the principle, specifically in relation to international waterways, are explained below.

In the *Corfu Channel* case between Great Britain and Albania, the ICJ affirmed, "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."⁸³ The *Lac Lanoux* arbitration⁸⁴ between Spain and France in 1957 applied the principles established by the *Corfu Channel* case to the issues relating to the navigation of international watercourses, stating that:

According to the rules of good faith, the upstream state is under the obligation to take into consideration the various interests involved, to seek to give them every satisfaction compatible with the pursuit of its own interests, and to show that in this regard it is genuinely concerned to reconcile the interests of the other riparian State with its own.⁸⁵

The most relevant international precedent in relation to the Indian River-

83. *Corfu Channel* (U.K. v. Alb.), 1949 I.C.J. 22 (Apr. 9).

84. *Affaire du Lac Lanoux* (Fr. v. Spain), (Arbitral Tribunal, Geneva, Nov. 16, 1957), *reprinted in* 53 AM. J. INT'L L. 156, 156 (1959).

85. *Id.* at 169.

Linking Project is the *Gabcikovo-Nagymaros* dispute between Hungary and Slovakia in 1997.⁸⁶ In this case, the ICJ provided important and significant guidelines in relation to the use and ownership of shared water resources. The ICJ, in deciding the effect of the construction of the Gabcikovo-Nagymaros dam project on the Danube, held that Czechoslovakia, by unilaterally assuming jurisdiction over shared watercourse, deprived Hungary of its right to an equitable and reasonable share of the natural resources and consequently failed to respect established principles of international law.

In *Gabcikovo-Nagymaros* the ICJ affirmed:

Throughout the ages, mankind has, for economic and other reasons, constantly interfered with nature. In the past, this was often done without consideration of the effects upon the environment. Owing to new scientific insights and to a growing awareness of the risks for mankind—for present and future generations of pursuit of such interventions at an unconsidered and unabated pace, new norms and standards have been developed, set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past. This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development.⁸⁷

Further, the separate opinion of Judge Weeramantry in *Gabcikovo-Nagymaros* particularly reflected the trend towards an increasing conglomeration of human rights and environmental health.⁸⁸ His Honor declared:

Contemporary standards apply to treaties that have an impact on the environment, and these contemporary standards are that environmental rights are human rights. . . . [T]reaties that affect human rights cannot be applied in such a manner as to constitute a denial of human rights as understood at the time of their application. A Court cannot endorse actions which are a violation of human rights by the standards of their time merely because they are taken under a treaty which dates back to a period when such action was not a violation of human rights.⁸⁹

Overall, the ICJ's judgment in *Gabcikovo-Nagymaros* represents a substantial strengthening of the claims of aggrieved downstream states such as Bangladesh. The ICJ's decision also persuasively suggests that a far more sustainability-focused management of international rivers will be expected of states when they

86. *Gabcikovo-Nagymaros Project* (Hung. v. Slov.), 1997 I.C.J. 7 (Feb. 5).

87. *Id.* at 78.

88. *See id.* pt. II.A.

89. Judgment in the Case Supporting *Gabcikovo-Nagymaros Project* (Hung. v. Slov.), 1997 I.C.J. 7 (Sept. 25).

are brought before international judicial bodies for alleged breaches of treaty provisions.

There is now a distinct corpus of mutually supportive legal norms across the breadth of international law sources concerning the regulation of international rivers. This established body of law demands that international rivers are exploited only in a manner that demonstrates the utmost respect for the interests of co-riparian states. The broader principles of international environmental law, such as holistic resource management and intra-generational equity, are also now a highly relevant consideration in adjudicating the validity of a riparian state's actions regarding international rivers. However, it is the stance adopted by the revised Helsinki Rules and the ICJ's unprecedented acknowledgment of the rights of downstream states in *Gabcikovo-Nagymaros* that have arguably been the two most significant developments that have greatly enhanced the rights of co-riparian states to previously unrecognized levels. Having identified the specific nature of the rights and responsibilities of co-riparian nations, the article next examines some of the actual and anticipated breaches by the Indian River-Linking Project.

IV. THE PROJECT'S ACTUAL AND ANTICIPATED BREACHES OF INTERNATIONAL LAW

The only reasonable conclusion one can draw from the judicial authority and numerous international law instruments discussed above is that an upper riparian state, such as India, may only exploit international rivers in a manner that does not unreasonably interfere with the rights of the lower riparian states to use those same waters. India understands this legal principle and normative expectation, which was incorporated in Article 9 of the Ganges Water Sharing Treaty (1996) with Bangladesh.⁹⁰ Despite this, the nature of the Indian River-Linking Project, as explored in Part II, is such that its construction will directly contribute to a plethora of negative socio-economic and ecological impacts in Bangladesh and thus represents a flagrant violation of many of the well-established legal principles discussed in Part III. The Project's likely impacts fall even further afoul of the increasingly sustainability-focused mandate of the revised Helsinki Rules and the ICJ's decision in *Gabcikovo-Nagymaros*.

The issues of "equitable use" and "no significant harm" which have become infused with international environmental law principles are of particular concern with regard to the Indian River-Linking Project, because riparian rights are rights of access and withdrawal. However, India's unilateral plan to interlink all but one of the fifty-four transboundary watercourses that join together to form the Ganges-Brahmaputra-Meghana (GBM) system (which flows out into the Bay of

90. See Agreement on Sharing of the Ganga/Ganges Waters at Farakka and on Augmenting its Flows, India-Bangl., Dec. 12, 1996, 1066 U.N.T.S. 15.

Bengal, the third largest freshwater river outfall in the world⁹¹) represents an exercise in control over the transboundary waters that is more akin to India possessing full ownership rights over these international resources. Further, the Indian River-Linking Project is operating on the false logic that rivers have an operating surplus, so that environmental flows that remain in the river basin and eventually flow out into the Bay of Bengal are essentially waste, such that it is reasonable under the principles of equitable use to put this remaining flow to what it considers an optimal use.⁹² The fatal logic in this thinking is that there is no such thing as a river surplus, and the decreased and often degraded flows that remain in rivers after there has already been an over-extraction are needed to support fragile ecosystems. Accordingly, the Indian River-Linking Project is contrary to customary international law under Article 24 of the revised Helsinki Rules, which prescribes that transboundary watercourse states such as India *shall* take all appropriate measures to ensure there are flows adequate to protect the ecological integrity of the waters of a drainage basin, including estuarine waters.

India's proposed solution to the issue of droughts and floods as it strives to attain economic growth is to assert ownership of the waters and to reallocate and distribute water unfettered by the concern for the ecological integrity of the environment. Thus, India's Project is a breach of Article 32 of the Helsinki Rules because it fails to take the appropriate measures to prevent, eliminate, or control conditions of water, whether resulting from human conduct or otherwise, that pose a significant risk of:

- a. Harm to human life or health;
- b. Harm to property; or
- c. Environmental harm.

The Indian River-Linking Project will result in an inequitable allocation of transboundary water to India at the expense of other users of the GBM basin, particularly Bangladesh, because a system of water-sharing has not been devised as required by international law under the doctrines of "equitable use" and "no significant harm." As discussed in Part II, dam construction, diversionary canals, and reservoirs in India will diminish or stop the normal river flooding, which in turn affect the diversity and quantity of fish that are vital to provide food downstream in Bangladesh. This is in addition to the decline or cessation of the rich and fertile silt carried by the fresh water down to Bangladesh for agricultural production.

The problems of poverty and health-related issues are related to the legality of the Project in terms of India's ability as a developing country to fulfill its duty to

91. Mohammad Nurunnabi Chowdhury, *The Indian River-linking Scheme and Bangladesh Response*, at 474, http://www.ben-center.org/ConfPapers_2005/Nurunnabi.doc (last visited Oct. 7, 2006).

92. Jayanta Bandyopadhyay, *Interlinking of Rivers: An Act of Water Acquisition?*, <http://www.saciwaters.org/literlinking1.htm> (last visited Nov. 15, 2006).

compensate people who will be displaced by its water projects or programs.⁹³ Principle 13 of the Rio Declaration also considers that states should “cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.”⁹⁴ Accordingly, Article 21 of the revised Helsinki Rules establishes a right under international law to adequate and effective compensation or other appropriate remedies for injuries arising from activities in a state relating to an international drainage basin. Similarly, pursuant to India’s obligations as a party to the Convention on Biological Diversity in situations where transboundary damage to biodiversity occurs, the state causing the damage has a duty to compensate the injured party.⁹⁵

Finally, it is worth briefly mentioning that India has made numerous other longstanding multilateral commitments that are threatened by the Project. While discussion of these treaties remains outside the scope of this article, they include:⁹⁶

- The London Convention Related to the Preservation of Fauna and Flora in their Natural State;
- The Rome International Plant Protection Convention;
- The World Heritage Convention; and
- The Convention on Migratory Species.

To summarize Part IV, it is noteworthy that in light of the seemingly insurmountable scientific evidence concerning the Project’s anticipated negative impacts on the environmental flows, overall ecological health, and socio-economic status of millions of people in downstream Bangladesh,⁹⁷ it appears to be almost stating the obvious to assert that the Indian River-Linking Project will unambiguously violate various principles of the revised Helsinki Rules, including the duties to maintain ecological integrity,⁹⁸ minimize environmental harm,⁹⁹ and avoid actions resulting in transboundary harm.¹⁰⁰ However, as noted in the preceding paragraphs, if India proceeds with the Project as planned, it will not only violate a number of obligations under the Helsinki framework but will also be disregarding a diverse array of binding treaty provisions under some of the

93. *Trail Smelter Case (U.S. v. Can.)*, 3 R.I.A.A. 1905 (1941), *reprinted in* 35 AM. J. INT’L L. 716 (1941).

94. United Nations Conference on Environment and Development, June 3-14, 1992, *Rio Declaration on Environment and Development*, princ. 13, U.N. Doc. A/Conf.151/26 (Aug. 12, 1992).

95. Convention on Biological Diversity, art. 14.2, June 5, 1992, 1760 U.N.T.S. 143.

96. Prabhas C. Sinha, *International Obligations*, 492 PROTECTING NATURE (Aug. 2000), *available at* <http://www.india-seminar.com/2000/492/492%20p.%20c.%20sinha.htm>.

97. For detailed discussion on the various scientific predictions of the Project, see discussion *supra* Part II.

98. Helsinki Revised, *supra* note 73, art. 7.

99. *Id.* art. 8.

100. *Id.* art. 16.

most important and widely ratified multilateral environmental agreements currently in operation.

V. EIA, STATE PARTICIPATION, AND COOPERATIVE MANAGEMENT OF THE PROJECT

In addition to the international law obligations discussed so far in this article concerning principles governing the acceptable use of international rivers, there are also numerous procedural principles to which a riparian state desirous of undertaking a development affecting common rivers must adhere to. These international obligations include the duty to: (a) provide adequate notice of intention and the factual state of affairs; (b) actively engage in consultation, negotiation, and mediation; and (c) suspend a proposed project pending the peaceful settlement of any inter-nation dispute.¹⁰¹ The Helsinki Rules further oblige any state which is planning to undertake or approve a development that is likely to alter the regime of the catchment basin to provide notice to any lower riparian state which is likely to be affected due to the anticipated changes in the water system.¹⁰² Such notice must include all essential facts that are necessary to enable the recipient nation to make their own assessment of the probable effect of the proposed alteration.¹⁰³ The Convention on Non-navigational Watercourses also contains specific provisions for such prior notification and information sharing. Articles 11-17 require parties to exchange information on the possible effects of planned measures on the condition of an international watercourse, timely notification accompanied by available technical data, and information on any planned measures that may have a significant adverse effect upon other watercourse states.

A. ENVIRONMENTAL IMPACT ASSESSMENT

The need to undertake environmental impact assessments (EIA) may have crystallized into a rule of customary international law.¹⁰⁴ In the context of transboundary watercourses, the requirement for an EIA is established by Article 29 of the revised Helsinki Rules. The requirements of Article 29 include an assessment of the effects of proposed activities on human health and safety as well as the impact of proposed activities on the environment.¹⁰⁵

101. See C. B. Bourne, *Procedure in the Development of International Drainage Basins: Notice and Exchange of Information*, 22 U. TORONTO L.J. 172 (1972). For an analysis of this procedural requirement, see M. RAFIQU L ISLAM, GANGES WATER DISPUTE: ITS INTERNATIONAL LEGAL ASPECTS 62-101 (1987); M. Rafiqu Islam, *The Ganges Water Dispute: An Appraisal of a Third Party Settlement*, 27 ASIAN SURVEY 918 (1987).

102. Helsinki Rules, *supra* note 58, art. 29.

103. *Id.*

104. THE WORLD BANK GROUP, INTERNATIONAL ENVIRONMENTAL LAW: CONCEPTS AND ISSUES, http://www4.worldbank.org/legal/legen/legen_ie1.html (last visited Oct. 7, 2006).

105. Helsinki Revised, *supra* note 73, art. 30.

India has failed to comply with Article 31 of the Helsinki Rules. The rule demands that where there is the potential threat of damage from activities of one co-riparian nation on the environment of another, the adversely affected nation has an *equal right* to participate in the EIA process even though the project may be completely outside its territory (as in the case of the Bangladesh and the Indian River-Linking Project). This joint EIA process shall include: (a) an assessment of the waters and the environments likely to be affected;¹⁰⁶ (b) the provision of a detailed description of the proposed activity and its likely effects, with particular emphasis on any trans-boundary effects;¹⁰⁷ (c) the identification of ecosystems likely to be affected, including an assessment of the living and non-living resources of the relevant water basin or basins;¹⁰⁸ (d) a description of mitigation measures appropriate to minimize environmental harm;¹⁰⁹ and (e) an appraisal of the institutional arrangements and facilities in the relevant drainage basin or basins.¹¹⁰ India has failed to comply with a single one of these requirements. Pursuant to Article 56 of the Helsinki Rules, India is supposed to have exchanged all of its own EIA information with Bangladesh. Contrary to this provision, at the time of writing, India has neither allowed Bangladesh to participate in an EIA nor provided Bangladesh with any scientific, technical, or feasibility studies of the scheme.¹¹¹ Consequently, India is in clear breach of its international law obligations as expressed in the revised Helsinki Rules.¹¹²

India also appears to have breached its obligations in relation to the assessment requirements established by Article 23 of the revised Helsinki Rules. Article 23 codifies the precautionary principle established by the Rio Declaration. Principle 15 of the Rio Declaration establishes that when there is a lack of full scientific certainty and there is the possibility of serious threats or irreversible damage to the environment, states shall err on the side of caution and establish "cost-effective measures to prevent environmental degradation." Given that the planning and preliminary construction stages of the Project have proceeded without any genuine acknowledgment of the enormous uncertainties surrounding the severity of environmental harm likely to be caused, it is evident that the Indian approach to date is characterized by an absolutely minimal effort towards implementing cost-effective precautionary measures. Furthermore, an integral part of the precautionary approach in an international context is that the proponent state has a duty to engage other affected states with prior information and early consultation. Once again, such engagement by India with Bangladesh

106. *Id.* art. 31, cmt. (a).

107. *Id.* cmt. (b).

108. *Id.* cmt. (c).

109. *Id.* cmt. (d).

110. *Id.* cmt. (e).

111. Bandyopadhyay & Perveen, *supra* note 1, at 18-19.

112. Helsinki Revised, *supra* note 73, arts. 56(2), 56(3).

has been virtually non-existent. Finally, according to the New Delhi Declaration on Sustainable Development, transparency is another key feature of the precautionary approach.¹¹³ Specifically, the New Delhi Declaration affirms that “[t]ransparent structures should be established which involve all interested parties, including non-state actors, in the consultation process. Appropriate review by a judicial body or administrative action should be available.”¹¹⁴ Based on its total non-disclosure of any environmental or social impact studies to either Bangladesh or its own citizens, India’s violation of this latter provision is self-evident. India’s extensive EIA-related breaches are all the more serious considering that the degraded and increasingly diverted environmental flows that will result from the scheme’s completion will almost certainly result in the severe environmental and social impacts outlined in Part II.¹¹⁵

B. STATE PARTICIPATION AND COOPERATIVE MANAGEMENT OF THE PROJECT

As discussed in Part II, the Indian River-Linking Project will almost certainly have an adverse effect on the incidence and severity of drought in Bangladesh. Consequently, Article 35(1) of the revised Helsinki Rules is of particular importance to Bangladesh’s predicament, as it declares that transboundary states *shall* cooperate in the management of waters to prevent, control, or mitigate droughts, having due regard to the interests of other basin states. This mandatory inter-state consultation includes a requirement for the establishment of a cooperative strategy that addresses the physical, biological, and socio-economic aspects of the anticipated drought conditions.¹¹⁶ It is noteworthy that Bangladesh has pre-existing diplomatic channels with India such as the Indo-Bangladesh Joint Rivers Commission. Such avenues could have easily been used to facilitate discussion of the balancing of interests of all stakeholders in the Project. Instead, India has to date chosen to ignore these bilateral channels of communication and has neglected to engage in any meaningful dialogue about the Project with its co-riparian neighbor.

India has failed to effectively cooperate in good faith¹¹⁷ and has not accepted or acknowledged Bangladesh’s legal right to equitably participate in joint river basin management as required by Article 64 of the Helsinki Rules. India has also been non-compliant with Article 4 of the revised Helsinki Rules, which endorses Recommendation 6(2) of the Bonn Declaration:

Decisions to construct large water infrastructure projects including dams should be taken after a participatory integrated assessment of needs and

113. *New Delhi Declaration*, *supra* note 82, at 215.

114. *Id.*

115. *See* Chowdury, *supra* note 91.

116. Helsinki Revised, *supra* note 73, art. 35.

117. *Id.* art. 11.

options, taking a precautionary approach into account. . . . All risks, costs and benefits should be accounted for. The role of large infrastructure in sustainable development and poverty reduction should be directly demonstrated.¹¹⁸

It is important to note that India's current unilateral stance on the Project not only represents a breach of numerous provisions of the Helsinki Rules, but also of numerous other prominent international environmental treaties. The Indian River-Linking Project poses a threat to the ecosystems of the Sundarbans wetlands in Bangladesh, which are listed under Article 3.1 of the Ramsar Convention,¹¹⁹ to which India is a contracting party. As a contracting party, India, under Article 4.1,¹²⁰ made a commitment to formulate and implement plans for their conservation and protection. In doing so, India, under Article 5.1,¹²¹ also made a commitment to consult with the other contracting parties, including Bangladesh, on the planning, conservation, and protection of these listed wetlands. Therefore, by failing to allow Bangladesh to effectively participate in GBM basin management and failing either to allow Bangladesh to participate in an EIA or to furnish Bangladesh with an EIA or any technical, scientific, or feasibility reports, India has failed to fulfill its commitments under the Ramsar Convention.

Similarly, as both India and Bangladesh are contracting parties to the Convention on Biological Diversity, they are obliged to apply the principles of prevention and precaution¹²² to develop national strategies, plans, or programs for the conservation and sustainable use of biological diversity.¹²³ Under the Convention on Biological Diversity, India also has an obligation to promote *international* technical and scientific cooperation and the exchange of information on hazardous activities which may cause damage to biodiversity.¹²⁴ These obligations also include the requirement to *immediately* notify potentially affected parties in case of imminent danger to biodiversity.¹²⁵ In an analogous manner to its obligations under the Ramsar Convention, India's disregard for important provisions of the Convention on Biological Diversity is both overt and multi-faceted.

In contrast to the reality of the situation, an assessment of the risks to life, health, property, and the environment created by the scheme should have been undertaken *jointly* with Bangladesh. This joint response would have been

118. THE INTERNATIONAL CONFERENCE ON FRESHWATER, BONN RECOMMENDATIONS FOR ACTION (2001), available at www.water-2001.de/outcome/BonnRecommendations/Bonn_Recommendations.pdf.

119. Ramsar Convention, The List of Wetlands of International Importance (as of Oct. 4, 2006), available at <http://www.ramsar.org/sitelist.pdf>; see also Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 996 U.N.T.S. 245 [hereinafter Ramsar].

120. Ramsar, *supra* note 119, art. 4.1.

121. *Id.* art. 5.1.

122. Convention on Biological Diversity, *supra* note 95, art. 1.

123. *Id.* art. 6(a).

124. *Id.* art. 14.1(c).

125. *Id.* art. 14.1(d).

fundamentally characterized by a negotiated determination of the amount of water needed for river and groundwater systems to maintain themselves, their functions, their uses, and their benefits to people.¹²⁶ Proper assessment of a project such as the Indian scheme entails establishing institutional and regulatory structures around an agreed or determined scientific baseline of:

1. What is a healthy river or ecosystem?
2. What are the determinative factors of river health?
3. What is a healthy working river?
4. What is a healthy environmental flow?
5. Where would water be stored for additional flows?

No such efforts have been made by India. It seems reasonable to contend that the manner in which India has undertaken the assessment and approval processes of the Project is, at least from an international law perspective, just as disturbing as the predicted consequences of the Project itself.

VI. CONCLUSION

The importance of adequate water flows for the maintenance of ecological balance and sustainable development in Bangladesh cannot be overstated. There is an increasing demand for fresh water to meet the needs of growing populations and the pursuit of economic and social development. Bangladesh's failure to secure a fair and rightful share of water from its international rivers will expose its economy, public health, and industrial development to uncertainty and grave risk. Severe deforestation, soil salinization, water logging, drought, flooding, and water pollution are only some of the adverse environmental impacts that may confront Bangladesh if the Project proceeds as planned. Therefore, it is not at all sensational to suggest that this Project may adversely affect the lives of hundreds of millions of people and have a detrimental effect on the whole economy of Bangladesh.

The unilateral commission of the Indian River-Linking Project constitutes an unfair and unjust approach to the development of common water resources; it compromises Bangladesh's lawful rights and entitlements to the international rivers that flow through its territory. This article has asserted that the implications of the Indian River-Linking Project on the ecological and socio-economic well-being of downstream Bangladesh are simply too serious, distinct, and imminent to not receive a high level of attention and scrutiny from the international community.

It is incumbent upon India to appreciate the fact that the river system in the sub-continent is a physical and geographical unit and, as such, is indivisible. Any

126. See *FLOW: THE ESSENTIALS OF ENVIRONMENTAL FLOWS* (Megan Dyson, Ger Bergkamp & John Scanlon eds., 2003), available at <http://www.waterandnature.org/pub/FLOW.pdf>.

development project that artificially interrupts the physical unity and interdependence of the river system must ascertain and address the possible damage to the basin and its co-users. It is simply inadequate to assess a project with such far-reaching impacts based exclusively on notions of arbitrary (in the context of natural resource management) national borders.

Admittedly, if the Project is completed as planned, it may result in some developmental benefits to parts of India. However, one must be mindful that India's own record of the past fifty years of dam building shows that its drought-prone areas have increased, not decreased.¹²⁷ Better alternatives, such as building watersheds and improving local water reservoir systems, may be relied upon to address the problem of flood and drought. To achieve sustainable development, it is essential to maintain and protect the biological diversity of transboundary river basins within both India and Bangladesh.

There remains a desperate need for more effective inter-jurisdictional management of transboundary water resources through international agreements of both bilateral and multilateral natures. Such meaningful instruments will only be formed through a more dynamic, open, and inclusive approach to decision-making processes than that which is exhibited under the status quo. Such contemporary approaches must also encompass values, ideas, and appropriate responses to environmental issues that are based *primarily* on the preservation and protection of the ecological integrity of waters and in accordance with the emerging international environmental legal norms in international water law.¹²⁸

It is in the best interest of both India and Bangladesh to avoid further unilateralism. Instead, these co-riparian nations should resort to constructive bilateralism in exploiting their common water resources. Mutual confidence and cooperation between the two co-riparian states in managing their transboundary river basins will be a massive step towards attaining the goals of sustainable development and regional peace and security. The South Asian Association of Regional Cooperation (the SAARC) can also play a crucial role, not only by ironing out the differences between India and Bangladesh on the Project, but also in assisting in undertaking an integrated and comprehensive sub-regional common water resources management planning and assessment scheme for the benefit of all SAARC countries. Adherence to such a collaborative approach would be an enormous step towards achieving the optimum utilization of sub-continental water resources, efficient flood management, irrigation, river system development, and hydro-electric power generation for the well-being of poverty-stricken people in both countries.

The international environmental legal norms and concerns that are emerging

127. Himanshu Thakkar, *Let's Have our Feet on Ground, Mr Prabhu*, DAMS, RIVERS & PEOPLE (S. Asia Network on Dams, Rivers and People, Delhi, India), Mar.-Apr. 2003, at 3, available at <http://www.narmada.org/sandrp/apr2003.pdf>.

128. Helsinki Revised, *supra* note 73, art. 2.

within customary international water law indicate that there is a growing recognition in the international community that it is essential to assess the prior rights of the environment and vital human needs regarding water. To fully implement effective sustainable development in transboundary watercourses, India's use of the traditional orthodox narrative or discourse for water resource development, namely "equitable use" and "no significant harm," must be broadened to include the emerging theories, concepts, and methods that promote the "integrated management of land, water and living resources . . . [and the] strengthening [of] regional, national and local capacities."¹²⁹ However, given the attitude and approach of India in the various phases of the Project that have so far been completed, such positive reforms seem somewhat unlikely, at least in the near future. Despite the emergence of holistic ecosystem management and human rights based approaches in international water law, India's current water policy is continuing down the path of traditional orthodoxy of supply augmentation for its agriculturally driven economic growth, rather than devising an approach that balances consumptive uses of water with ecological and human needs in common with Bangladesh.

129. World Summit on Sustainable Development, Johannesburg, S. Afr., Aug. 26 – Dec. 4, 2002, *Report: Plan of Implementation of the World Summit on Sustainable Development*, ¶ 24, U.N. Doc. A/Conf.199/20/Corr.1 (Jan. 8, 2003).

