Power Flows: Hydro-hegemony and Water Conflicts in South Asia

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Water is a point of friction on the Indian subcontinent and fears of looming 'water wars' are growing. One factor compounding such fears is the presence of a hydro-hegemon; India. Power asymmetry between riparians, however, does not necessarily lead to violent conflict (even though it can create inequitable outcomes). Indeed, the presence of a hydro-hegemon serves as a stabilising factor. This is currently the case in South Asia. Understanding the flows of power in transboundary water interactions in the region is of consequence to Australia's increasing involvement in the hydropolitics there.

Water is a point of friction on the Indian subcontinent, which is home to more than 21 per cent of the world's population yet must make do with barely 8.3 per cent of global water resources.[1] Now burgeoning populations—a result of rapid development of the region—are increasing demand for water at an unsustainable rate. Climatic changes affecting glacial melt in the Himalayas exacerbate the problem of water availability.[2] Scarcity in itself, however, is not the only trigger of water conflict here; major controversies also exist in the region as to the location and construction of dams.[3] Moreover, mutual suspicions and reluctance to cooperate between riparians may impair timely approaches to the collective action problems of non-traditional security threats such as water conflict.[4] Indeed, fears are rising about the possibility of 'water wars'.

Proponents of the water wars thesis are vociferous, and too often simplistic in their understanding of what constitutes and contributes to water disputes. Popular commentary and influential books such as Brahma Chellaney's *Water: Asia's Next Battleground*[5] perpetuate the fear that state-versus-state zero-sum games are the new norm for hydropolitics. This unsophisticated view skews assessments of regional security and stability. The reality of

[1] Brahma Chellaney, *Water: Asia's New Battleground* (Washington D.C., Georgetown University Press, 2011), p. 277.
[2] Michael Renner, 'Water Challenges in Central-South Asia', Noref Policy Brief No 4 (Oslo: The Norwegian Peacebuilding Centre, December 2009), p. 8.
[3] Douglas Hill, 'Boundaries, Scale and Power in South Asia', in Devleena Ghosh, Heather Goodall and Stephanie Hemelryk-Donald (eds), *Water, Sovereignty and Borders in Asia and Oceania* (New York: Routledge, 2009), p. 96.
[4] Renner, 'Water Challenges in Central-South Asia', p. 8.
[5] Chellaney, *Water: Asia's New Battleground*, p. 50.

water cooperation and conflict is complex and does not manifest itself in the simplistic binary proposition of peace and war.

Nonetheless, the fear of water wars in South Asia persists and is based largely on the following four factors:

- There is intense competition over water resources in South Asia.
- Water scarcity due to climate change and increasing demand from growing populations is expected to exacerbate this competition to a level of outright conflict.
- The region is already politically and socially unstable. Such volatility combined with increasing environmental stresses may create a situation particularly vulnerable to conflict.
- India is perceived as a regional bully.

It is this last point that is the focus of this article, which argues that a significant factor preventing war over water is the very presence of a hydro-hegemon. This is because India elicits consent from its co-riparians for the order it has established, and India's superior power position effectively discourages any violent resistance against the order.[6]

Australia is increasingly interested in the challenges of inter-state water governance in South Asia and the potential of significant conflict that may arise out of unresolved issues. Australia is a major partner in the South Asia Water Initiative, led by the World Bank, which aims to increase regional cooperation on shared water issues.[7] In October 2012, Australian Prime Minister Gillard visited India to launch the India-Australia Water Science and Technology Partnership to enhance cooperation on water management in the region.[8] These are two of the most prominent initiatives that Australia is involved in, but there are many more examples of lower-level collaborations between academic institutions and businesses.

Yet despite the growing interest of Australia in these issues, little research has been conducted into the multi-level dynamics of water conflict and water cooperation—together known as water interactions—in South Asia, nor into how India's role as the regional hegemon affects these interactions and the prospect of outright conflict. This article attempts to fill this knowledge gap.

[6] Mark Zeitoun and Jeroen Warner, 'Hydro-Hegemony—A Framework for Analysis of Trans-boundary Water Conflicts', *Water Policy*, vol. 8 (2006), p. 437.
[7] South Asia Water Initiative, <http://www.southasiawaterinitiative.org/node/8> [Accessed 30 September 2013].
[8] 'India-Australia Water Science and Technology Partnership', Department of Foreign Affairs and Trade, 21 October 2012, <http://www.ausaid.gov.au/HotTopics/Pages/Display.aspx?QID=840> [Accessed 30 September 2013].

This article begins by establishing the concept of hydro-hegemony and how it applies to water conflict and cooperation. The second half of the article systematically addresses each of India's bilateral relationships with its co-riparians Pakistan, Nepal, Bhutan and Bangladesh. It illustrates that the power asymmetry in the region creates an equilibrium of conflict and cooperation that is highly unlikely to tip over into a 'water war'. The lengthy and fraught negotiation process between India and Pakistan over the Indus Waters Treaty was ultimately a confidence-building measure that resulted in an agreement that has withstood numerous other conflicts. So too the agreements India has with Nepal and Bangladesh, though problematic, were entered into through consent not coercion. As for Bhutan, this Himalayan kingdom has on the whole benefited tremendously from its cooperative relationship with the hydro-hegemon.

This article takes the realist view that states are predominant actors in international relations and that they act as coherent units.[9] Of course water interactions occur within a complex network of numerous types of actors on multiple levels, but it is not the purpose here to explore these. Similarly, it is not in the scope of this article to assess the numerous inequalities and injustices that arise out of situations of great power asymmetry. While hydro-hegemony may produce unfair outcomes, it also produces stability that mitigates the prospect of water war, and it is this point that is of primary concern here.

Hegemony and Water Conflicts

Power relations between riparians largely determine the control over water resources that each riparian wields. Even the upstream/downstream dynamic is predicated on power; those upstream use water to get more power, and those downstream use power to get more water.[10] Unsurprisingly, it is the more powerful side in a water interaction—especially when the competition is over scarce water resources—that achieves and maintains the upper hand.[11] This is not to say that the stronger party will always use brute strength in the attainment of self-serving objectives. Creating compliance through the use of soft power (i.e., having a self-serving ideology freely adhered to by the weaker actor) is a mechanism most frequently utilised by the stronger party.[12]

Power asymmetry of a lesser or greater degree is usually present in water basins, and affects the water interactions that are established, thereby also

[9] Robert O. Keohane and Joseph S. Nye, *Power and Interdependence*, third edition (New York: Longman, 2001), p. 20.
[10] Zeitoun and Warner, 'Hydro-Hegemony', p. 436.
[11] Ibid., p. 442.
[12] Ibid., p. 443.

influencing the outcomes of and approaches to water conflicts.[13] In contexts of a relative balance of power, riparians can decide together whether or not to collaborate on water projects or governance issues; but in an 'anarchic' basin, each state acts unilaterally and opts against communicating with its neighbours beyond the bare minimum.[14] This is the case in South Asia currently, where, as is discussed below, a culture of secrecy prevails.

Hydro-hegemony occurs when one state within a shared river basin asserts its power over other riparian states—even upstream ones.[15] This is because hydro-hegemony rests not on riparian position alone, but on three pillars:

- Pillar 1: **Power**, consisting of;
    - Political power
    - Economic power
    - Military power
- Pillar 2: Riparian **position**
- Pillar 3: **Potential** for water resource exploitation.[16]

For every riparian in any given transboundary water scenario, the strength of each of these pillars is relative to the others, and to the pillars of all other riparians. Needless to say, power asymmetry is highly dynamic because the only constant pillar is riparian position. Furthermore, power is amorphous, relative, subjectively perceived, and therefore impossible to quantify.

'Hegemony' connotes domination and coercion, but its real-world applications are nuanced. It can bring stability to a region, provide patronage to weaker states and provide a platform for leadership on issues of mutual concern. Indeed, hydro-hegemony is a significant factor preventing war over water because non-hegemonic states usually comply with the order preferred by the hegemon, whose superior power position effectively discourages any violent resistance against the order.[17]

[13] Mark Zeitoun and Naho Mirumachi, 'Transboundary Water Interaction 1: Reconsidering Conflict and Cooperation', *International Environmental Agreements: Politics, Law and Economics*, vol. 8, no. 4 (2008), p. 309.
[14] Jeroen F. Warner and N. Zawahari, 'Hegemony and Asymmetry: Multiple-chessboard Games on Transboundary River', *International Environmental Agreements: Politics, Law and Economics*, vol. 12, no. 3 (2012), p. 217.
[15] C. Sneddon, 2013, 'Water, Governance and Hegemony', in, L. M. Harris, J. A. Goldin and C. Sneddon, *Contemporary Water Governance in the Global South: Scarcity, Marketization and Participation* (London: Routledge, 2013), pp. 15-6.
[16] Zeitoun and Warner, 'Hydro-Hegemony', pp. 451-452. These pillars of hydro-hegemony have been originally developed by T. Naff and R. Matson in 1984 in relation to the Middle East, and expanded on by A. Medzini in 2001 in relation to the River Jordan.
[17] Zeitoun and Warner, 'Hydro-Hegemony', p. 437.

Hegemony is "leadership buttressed by authority" and is thus distinguished from dominance, which is "leadership buttressed by coercion".[18] Certainly, in the case of transboundary water interactions in South Asia, India's hydro-hegemony has not been an oppressive or destructive force, though India is yet to mature into a true leader on the regional water front.

Whether a hydro-hegemon chooses leadership or domination, and when they choose to do so, is ultimately governed by the broader political context.[19] Likewise, a weaker party to the interaction may choose to comply with the hydro-hegemon's direction for reasons other than its apparent or immediate best interest in the matter at hand. Control over water resources, then, is not achieved through violence but rather consent, which is gained through a suite of often subtle mechanisms.[20]

There are four mechanisms used to produce compliance. The **mechanism of coercion** can utilise military force, covert action, or direct pressure. Military force is rarely used in water conflicts, and usually then only as a last resort. Covert action could include undercover operations aimed at weakening the political, military or hydraulic apparatus of its competitor, or make a pact with those who will. Direct pressure is arguably the most commonly used tactic in hydropolitics, and includes trade embargoes, diplomatic isolation, threat of military action, espionage and propaganda.[21]

The **utilitarian mechanism** employs incentives as a 'carrot' to the 'stick' of coercive measures. Incentives for compliance with a hydro-hegemon's preferred state of affairs can include trade incentives, diplomatic recognitions, military protection, and the promise of cooperation on mutually beneficial water projects. These tactics can create stability in the water interactions between the involved parties.[22]

Normative mechanisms are those that result in a formalised agreement, such as a treaty. A treaty is generally considered an instance of cooperation, however when viewed through the lens of hydro-hegemony this is not necessarily the case. The signing of an agreement to institutionalise the status quo may be to the hydro-hegemon's advantage, even if the weaker riparian will benefit enough to justify signing.[23] If an agreement is bilateral, it precludes participation of non-signatory riparians, thereby pre-empting their rights and ultimately leaving the issue unresolved.[24]

[18] Ibid., p. 438.
[19] Ibid., p. 455.
[20] Ibid., p. 436; Mark Zeitoun, Naho Mirumachi and Jeroen Warner, 'Transboundary Water Interaction II: The Influence of "Soft" Power', *International Environmental Agreements: Politics, Law and Economics*, vol. 11, no. 2 (2011), p. 165.
[21] Zeitoun and Warner, 'Hydro-Hegemony', pp. 446-7.
[22] Ibid., p. 447.
[23] Ibid., pp. 447-8.
[24] Ibid.

The **ideological mechanism** can take many guises—soft power, securitisation, and the creation of a sanctioned discourse. The use of soft power allows issues to be framed by one riparian in a way that their portrayal is accepted without question; somewhere between fully conscious bargaining within an established order and unacknowledged acceptance of that order, the weaker side's implicit (or explicit) compliance with the outcome is assured.[25] An important component of soft power is how the hegemon is perceived by those it aims to influence.[26]

The mechanism/s employed by a hydro-hegemon depend on its capacity to persuade subordinate actors to accept not just the hegemon's authority, but also to adopt and internalise its values and norms intended to impose one solution over others. In other words, hydro-hegemons will avoid coercive tactics if the non-hegemons would comply unwittingly.[27] This is the situation in South Asia currently, and we now explore how India as hydro-hegemon has been able to create consent.

India as Hydro-hegemon

India scores highly on the three pillars of hydro-hegemony. It wields the most power in South Asia in terms of political, economic and military might. Because of this, it also has significant capacity for water resource exploitation such as the construction of dams for hydropower generation. India certainly has the largest political and geographic stake in the transboundary waters of South Asia. But most rivers in eastern and north-eastern India cut across a number of countries, complicating the number of stakeholders in dispute resolution and treaty negotiations.

Neighbours view India with suspicion, making it difficult to conduct discussion on common-interest issues in good faith.[28] India's hegemony is assumed to be in some way nefarious, undermining regional stability, or necessarily contrary to the interests of India's co-riparians. But while India's relations with its co-riparians (except Bhutan) are far from cordial,[29] violent conflict is unlikely because ultimately India's hydro-hegemony is predicated on consent, not coercion. India is able to use its soft power as well as normative and utilitarian mechanisms of hydro-hegemony to overcome the fact that it is not the upper riparian on all the rivers that pass through its territory. India has been able to gain access to upstream water resources

[25] Zeitoun, Mirumachi and Warner, 'Transboundary Water Interaction II', pp. 163-4.
[26] M. Bhasin 2008, 'India's Role in South Asia—Perceived Hegemony or Reluctant Leadership?', *Indian Foreign Affairs Journal*, vol. 3, no. 4 (October-December 2008), p. 3.
[27] Zeitoun and Warner, 'Hydro-Hegemony', p. 438.
[28] Binyak Ray, 'Global Conventions and Regulations on International Rivers: Implications for South Asia', in Kuntala Lahiri-Dutt, and Robert J. Wasson (eds), *Water First: Issues and Challenges for Nations and Communities in South Asia* (New Delhi: Sage, 2008), p. 84.
[29] Ibid., p. 88.

and influence downstream riparians to overlook transboundary water arrangements that may adversely affect them, all without the use of violence.

The primary way in which India deals with its neighbours is bilateral, and tensions remain about whether transboundary water disputes should continue to be handled bilaterally (the hydro-hegemon's prerogative) or internationalised.[30] India's persistence in establishing purely bilateral arrangements and not involving the international community in matters of transboundary water governance in South Asia certainly has been decisive in shaping the politics of water sharing in the region.[31] Even though all the rivers flowing through India are international and pass more than one country, all the treaties on these rivers are bilateral.[32] India did not even acknowledge that usage of the Ganges is an international issue until 1970.[33]

Tellingly, India's latest National Water Policy devotes only two paragraphs to transboundary waters, and these emphasise bilateralism as the sole approach.[34] Of course this should not be surprising; hegemonic powers benefit through bilateral arrangements, while small and medium powers enjoy greater leverage within multilateral institutions.[35] Yet the lack of multilateralism in South Asia regarding transboundary water management is not solely a manifestation of India's self-centred ambitions. The large number of riparian countries in the region complicates the processes of multilateral diplomacy and negotiation—of finding common ground for reaching agreement on collective action, norms or rules.[36] In the interest of avoiding conflict, bilateralism is a faster and surer approach than multilateralism.

International agreements, be they bilateral or multilateral, are rarely instances of pure cooperation; more often than not they belie conflict and asymmetry of outcome. An example of a hegemon enshrining inequalities in international agreement is the Treaties of Friendship that India instigated in the region. The treaties of friendship arose at a time when India gained independence from the British and wanted to prevent a communist influence spreading south from China. Consequently, India concluded three lopsided treaties with its small neighbours; Nepal, Bhutan and Sikkim to bring them

[30] Douglas Hill, 'The Regional Politics of Water Sharing: Contemporary Issues in South Asia', in Kuntala Lahiri-Dutt and Robert J. Wasson (eds), *Water First: Issues and Challenges for Nations and Communities in South Asia* (New Delhi: Sage, 2008), p. 75.
[31] Ibid., p. 60.
[32] Richa Singh, *Trans-boundary Water Politics and Conflicts in South Asia: Towards 'Water for Peace'* (New Delhi: Centre for Democracy and Social Action, 2008), p. 36.
[33] Hill, 'Boundaries, Scale and Power in South Asia', p. 91.
[34] Government of India, 'National Water Policy (2012)', Ministry of Water Resources, Government of India, 2012.
[35] National Research Council of the National Academies, *Himalayan Glaciers*, p. 91.
[36] Ray, 'Global Conventions and Regulations on International Rivers', p. 84.

into its sphere of influence in order to make the Himalayas a strong natural border with China.[37] A similar treaty was signed with Bangladesh in 1972.[38]

Unsurprisingly, India has since been reluctant to update any of these treaties.[39] But while this is a source of some discontent (especially in Nepal),[40] there has been no real momentum from these smaller states to agitate for change. One tactic available to the non-hegemon is that of issue linkage wherein non-water-related issues are included in negotiations over water as a point of leverage.[41] This, however, has not been a tactic utilised by India's co-riparians to alter the status quo of the Treaties of Friendship.

India's insistence on secrecy regarding hydrological data is contributing to the sense of distrust within the region, and increases tensions about transboundary water management. A striking feature of many transboundary hydropower projects in South Asia is that they were not known through government-to-government communication, but through public media. Timely and adequate information is never easily or fully given. This has been Pakistan's complaint over the Baglihar proposal, and Bangladesh's complaint over the Tipaimukh and the National River Linking Project in India.[42] India's 2012 National Water Policy hints at declassifying more hydro data,[43] but as the balance of power is already tipped in India's favour, there is arguably little political imperative to do so. Moreover, a culture of secrecy and suspicion prevails across all governments in South Asia, thus stifling any inclination to declassify or share data.[44]

As we can see, on the whole India's hydro-hegemony has been a factor in preventing violent conflict because it creates compliance among the co-riparians rather than relying on coercion to maintain the status quo.[45] The rest of this article will discuss how this occurs in each of the bilateral co-riparian relationships India has.

[37] Surya P. Subedi, *Dynamics of Foreign Policy and Law: A Study in Indo-Nepal Relations* (New Delhi: Oxford University Press, 2005), pp. 25, 42.
[38] Emma Condon, Patrick Hillman, Justin King, Katherine Lang and Alison Patz, 'Resource Disputes in South Asia: Water Scarcity and the Potential for Interstate Conflict', prepared for the Office of South Asia Analysis, US Central Intelligence Agency (Madison: Robert M. La Follette School of Public Affairs, University of Wisconsin, 1 June 2009), p. 9.
[39] Bhasin, 'India's Role in South Asia', p. 16.
[40] Subedi, *Dynamics of Foreign Policy and Law*, p. 5.
[41] Zeitoun and Warner, 'Hydro-Hegemony', pp. 454-5.
[42] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 16.
[43] Government of India, 'National Water Policy (2012)'.
[44] Navnita C. Behera, 'Forging New Solidarities: Nonofficial Dialogues', in, M. Mekenkamp, P. van Tongeren and H. van de Veen (eds), *Searching for Peace in Central and South Asia: An Overview of Conflict Prevention and Peacebuilding Activities* (Boulder: Lynne Rienner Publishers, 2002), p. 227.
[45] Zeitoun and Warner, 'Hydro-Hegemony', p. 437.

India and Pakistan

Pakistan is downstream of India on the Indus River system, and at the same time is increasingly water scarce. Between 1947 and 2011, Pakistan's population swelled almost twelvefold. Now Pakistan has more than 180 million people, and is likely to have 335 million citizens by 2050. While the population has ballooned, the quantity of water in the single river system on which the country is dependent has remained the same. With per capita availability of freshwater declining at an alarming rate, Pakistan has gone from being a water-surplus country to a water-distressed one.[46] Moreover, the issue of water quality is as important to Pakistan as water quantity. An estimated 40-55 million Pakistanis do not have access to safe drinking water, yet the government spends forty-seven times as much on the military budget as on water and sanitation.[47]

The confluence of water-related problems and military might in Pakistan is troubling for the region. There are grave concerns about what might happen in this water-distressed, nuclear-armed, terrorist-besieged, overpopulated, heavily irrigation dependent and already politically unstable country if its single water lifeline, the Indus River, continues to be depleted at the current rate.[48] This reduction in the Indus River flow could be due to unsustainable irrigation practices by Pakistan, climate change affecting Himalayan glacial melt patterns, or diversions upstream in India. Indeed, there is a widespread perception in Pakistan that Indian control of the Indus water head can be misused to block water to Pakistan and devastate its economy.[49] This perception is a manifestation of the soft power that India wields as hydro-hegemon. In such a context, disputes over water will likely continue to undermine the prospect of a stable and sustainable peace between India and Pakistan.[50]

The Indus Waters Treaty (IWT) is the object of most water-related contention between India and Pakistan. It is both a symbol of cooperation between the two countries (because it has withstood armed conflict) and discord (because it continues to foster resentment). It thus illustrates that conflict and cooperation coexist,[51] and is a case in point of how the absence of war is not equivalent to an efficient and equitable solution.[52] Although it is often hailed as a great example of bilateral cooperation at a time of conflict between the riparian states, this argument ignores the historical contingencies that were so important in constraining Pakistan's initial scope of action.

[46] Chellaney, *Water: Asia's New Battleground*, p. 218.
[47] Renner, 'Water Challenges in Central-South Asia', p. 6.
[48] Chellaney, *Water: Asia's New Battleground*, p. 227.
[49] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 10.
[50] Condon et al., 'Resource Disputes in South Asia', p. xv.
[51] Zeitoun and Mirumachi, 'Transboundary Water Interaction 1', p. 299.
[52] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 32.

The agreement between India and Pakistan was largely brokered with the assistance of the World Bank and, although there was the appearance of concession, India was able to exercise its power as a hydro-hegemon and achieve its objectives.[53] Yet the eight-year process of negotiating the IWT was an important exercise in compromise and confidence building between the two conflicted states. Both countries wanted the eastern basin of the Indus River system, which is better for agriculture, but Pakistan relinquished it and agreed instead to develop the western basin. India kept control of the upstream areas but refrained for a decade from developing canals and agricultural infrastructure on the eastern basin to allow Pakistan time for its own agricultural development.[54]

The IWT divides the six major rivers of the Indus River system between the two countries. In 1960, India was allocated complete use of the three eastern rivers (Sutlej, Beas and Ravi), while Pakistan was allocated nearly unfettered use of the three western rivers (Indus, Jhelum and Chenab). Both countries are allowed under certain, narrowly defined circumstances, to use each other's rivers. In practice, Pakistan has little to gain from this provision, as no major rivers originate within its political borders. The Indian Government, however, can significantly limit the flow of water into Pakistan.[55] Nonetheless, India argues that it is actually Pakistan that has the better end of the deal: India contributes more to the Indus than does Pakistan, yet Pakistan is allowed to take proportionally far more than India.[56]

Another example of the fraught relationship between India and Pakistan regarding shared water resources is the imbroglio over the Baglihar Dam on the Chenab River in the eastern basin of the Indus River system. Pakistan has opposed the Baglihar Dam on the grounds that it violates the IWT because of its potential use by India to store or divert waters destined for Pakistan.[57] The IWT does not permit India to build retention or diversion projects on the Chenab, Indus or Jhelum rivers.[58] Construction of the dam began in 1999 and, following Pakistani objections, the World Bank adjudicated in 2005 that the dam would only be filled between 21 June and 31 August, with Pakistan's prior consent and with specified minimum river flows. Yet, in 2008, India continued to fill the dam well into September, considerably reducing the Chenab's flow and causing crop damage in

[53] Hill, 'Boundaries, Scale and Power in South Asia', p. 89.
[54] Shuntaro Yamamoto, 'The Indus Water Dispute and its Relation with Domestic Policies', in Nevelina I. Pachova, Mikiyasu Nakayama and Libor Jansky (eds), *International Water Security: Domestic Threats and Opportunities* (USA: United Nations University Press, 2008), pp. 30-1.
[55] Condon et al., 'Resource Disputes in South Asia', pp. 4-5.
[56] Fred Pearce, *When the Rivers Run Dry: Water—The Defining Crisis of the Twenty-first Century* (Boston: Beacon Press, 2006), p. 177.
[57] Condon et al., 'Resource Disputes in South Asia', p. 6.
[58] Ibid., p. 38.

Pakistan. A World Bank tribunal subsequently asked India to lower the height of the dam.[59]

India claims the Baglihar project is a fully legal scheme as it involves no water storage and therefore does not violate the IWT. India has accused Pakistan of trying to prevent it from addressing the grievances of the people of Jammu and Kashmir.[60] This claim is not entirely unreasonable considering that the people of Jammu and Kashmir are in dire need of power and have not been taken into account by the IWT. They believe Pakistan wants to deny them the right to use the state's own rivers.[61] Nonetheless, India's insistence on the legality of the dam is putting strain on the institutions of the treaty by bending the rules of the agreement and violating its spirit of fairness and equality.[62] While this may be unfair, it is significant that the grievances between the hydro-hegemon and its co-riparian are addressed through the established legal framework, to which Pakistan has consented, rather than through outright violence or war.

India and Nepal

It is said that water and energy pose the biggest constraint on India's growth because demand for both is increasing at a rate faster than current capacity can provide.[63] Part of India's energy shortfall can be addressed through domestic hydropower generation potential,[64] though there is strong civil society opposition to dam building in India.[65] Nepal's enormous hydropower potential could provide a convenient and significant supply of 'clean' energy for India's growing needs. By developing its major rivers, Nepal can provide large hydropower and storage projects to augment the low flows during the lean season and, to a large extent, mitigate India's power shortfall, particularly in the north of the country.[66]

Nepal's theoretical hydropower potential is enormous, at 83,000 MW (identified power potential is 42,000 MW).[67] Revenues from hydropower sales could multiply the growth rate in several Nepalese sectors, including

[59] Renner, 'Water Challenges in Central-South Asia', p. 7.
[60] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 23.
[61] Ibid., p. 23.
[62] Condon et al., 'Resource Disputes in South Asia', p. 38.
[63] Madhuresh Kumar and Mark Furlong, 'Securing the Right to Water in India: Perspectives and Challenges', *Our Right to Water* (Ottawa: Blue Planet Project, 2012), p. 8.
[64] Chellaney, *Water: Asia's New Battleground*, p. 178.
[65] Anshu Bharadwaj, Rahul Tongia and V.S. Arunachalam, 'Wither Nuclear Power?', *Economic and Political Weekly*, vol. 41, no. 12 (25-31 March 2006), p. 1206.
[66] Iswer R. Onta, 'Harnessing the Himalayan Waters of Nepal: A Case for Partnership on the Ganges Basin', in Asit K. Biswas and Juha I. Uitto (eds), *Sustainable Development of the Ganges-Brahmaputra-Meghna Basins* (New Delhi: Oxford University Press, 2001), p. 110.
[67] Ibid., p. 107.

industry, agriculture and tourism.[68] If properly planned and managed, development of Nepal's storage potential could yield tremendous benefits not just in terms of hydropower generation, but flood control during the monsoon, flow augmentation for downstream irrigation and navigation and water supply.[69] Nepal's lack of capacity for river diversion or water storage is at the root of disputes with India in relation to both hydropower generation and flood control.[70]

Yet hydropower production remains largely undeveloped for domestic uses and export. Nepal produces only 714 MW of electricity for its 30 million citizens from all sources of energy, with the result that power outages for several hours a day throughout the year are common.[71] Only 15 per cent of the population has access to electricity and per capita electricity consumption is among the lowest in South Asia.[72] Indeed, a country that could be a major exporter of electricity actually imports power from India.[73]

Nepal and India (then under British rule) began cooperating over water resources in 1920.[74] Since then, there have been a significant number of positive and mutually beneficial instances of cooperation regarding water resources. To promote high-level coordination in implementing various agreements and understandings, a Nepal-India joint Committee on Water Resources, headed by each country's water resources secretary, has been set up as the umbrella mechanism covering all water related committees and groups.[75] Indian-aided projects, besides establishing modest hydropower-generating capacity, have helped bring 300,000 hectares of farmland in Nepal under irrigation.[76] Nepal and India have also engaged in issues-linkage by bundling together projects related to irrigation, hydropower, navigation, fishing and forestry.[77]

Treaties, however, are not the embodiment of unequivocal cooperation.[78] There are usually power asymmetries at play that can lead to less than equitable outcomes for the weaker party. The hydro-hegemon may structure a treaty to reflect existing inequalities and use utilitarian mechanisms or soft

[68] Ratneshwar Lal Kayastha, 'Water Resources Development of Nepal: A Regional Perspective', in Asit K. Biswas and Juha I. Uitto (eds), *Sustainable Development of the Ganges-Brahmaputra-Meghna Basins*, (New Delhi: Oxford University Press, 2001), p. 141.
[69] Onta, 'Harnessing the Himalayan Waters of Nepal', p. 106.
[70] Condon et al., 'Resource Disputes in South Asia', p. 13.
[71] Chellaney, *Water: Asia's New Battleground*, p. 282.
[72] Dipak Gyawali, 'Missing Leg: South Asia's hobbled Water Technology Choices', *Economic and Political Weekly*, vol. 36, no. 39 (29 September-5 October 2001), p. 3748.
[73] Chellaney, *Water: Asia's New Battleground*, p. 282.
[74] R. B. Shah, 'Ganges-Brahmaputra: The Outlook for the Twenty-first Century', in Asit K. Biswas and Juha I. Uitto (eds), *Sustainable Development of the Ganges-Brahmaputra-Meghna Basins* (New Delhi: Oxford University Press, 2001), pp. 24-5.
[75] Chellaney, *Water: Asia's New Battleground*, p. 284.
[76] Ibid., p. 284.
[77] Ibid.
[78] Zeitoun and Mirumachi, 'Transboundary Water Interaction 1', p. 300.

power to attain the weaker riparian's compliance.[79] This can be said to be the case in the transboundary water management treaties and agreements between India and Nepal. There are several such treaties regarding the development of shared hydropower and irrigation projects, but most, though considered reasonable from India's viewpoint, are seen as a sell out by many in Nepal.[80] The Koshi and Gandak river treaties of the 1950s did not deliver the expected benefits to Nepal (even following amendments in the 1960s) and have left a bad legacy that, to this day, weighs down bilateral cooperation.[81]

Even the implementation of the more recent Mahakali Treaty (1996) has been impeded by different interpretations of its terms.[82] Indeed, it has been argued that the saga of the Mahakali Treaty presents itself as a case in point of Nepali polity and its relationship with its big southern neighbour.[83] It certainly provides an interesting illustration of how India has used its hydro-hegemony to securitise water issues between the two countries, especially in the Tanakpur Barrage controversy. India began construction on the barrage on its own side of the Mahakali River then used discursive power to create a narrative of 'panic politics' that put pressure on the Nepalese Government to allow construction on the Nepali side.[84]

Considering how easy it is for India to securitise water—to make it seem a threat in need of emergency action—it is understandable that Nepal is troubled by the reversal of the usual upstream-downstream dynamic. Resentment lingers, for example, over Nepal's obligation to inform India of its proposed non-consumptive developments (including the construction of small and medium hydropower plants). Meanwhile, India does not have to inform Nepal of the same, even when it developed large-scale irrigation schemes in Bihar and Uttar Pradesh. Because of an ambiguity in a bilateral agreement India claims it has prior right to consumptive water use in watercourses shared by the two countries.[85]

At the same time, there is enormous political pressure within Nepal to harness water resource *vis-a-vis* India, particularly through mega projects, which are believed to bring more economic benefit and political kudos than more moderately sized undertakings.[86] Moreover, Nepali party functionaries

[79] Zeitoun and Warner, 'Hydro-Hegemony', pp. 447-8.
[80] Onta, 'Harnessing the Himalayan Waters of Nepal', pp. 109-10.
[81] Chellaney, *Water: Asia's New Battleground*, p. 283.
[82] Ibid., p. 284.
[83] Dipak Gyawali and Ajaya Dixit, 'Mahakali Impasse and Indo-Nepal Water Conflict', *Economic and Political Weekly*, vol. 34, no. 9 (27 February -5 March 1999), p. 561.
[84] Naho Mirumachi, 'Securitising Shared Waters: An Analysis of the Hydropolitical Context of the Tanakpur Barrage Project between Nepal and India', *The Geographical Journal*, vol. 179, no. 4 (June 2013), pp. 300-19, DOI: 10.1111/geoj.12029.
[85] Ajaya Dixit and Dipak Gyawali, 'Nepal's Constructive Dialogue on Dams and Development', *Water Alternatives*, vol. 3, no. 2 (2010), pp. 106-23, 115.
[86] Gyawali and Dixit, 'Mahakali Impasse and Indo-Nepal Water Conflict', p. 563.

fear political allegations that any project is not moving forward due to their action or inaction, irrespective of technical, economic or developmental demerits of such projects. They prefer to be seen supporting projects rather than questioning them.[87]

Several commentators have suggested that India has not been sensitive to Nepal's concerns, nor has it handled wisely the difficult and complex transboundary water negotiations.[88] As hydro-hegemon, however, India retains the prerogative to establish the agenda for water interactions, and has no obligation to extend courtesies to its co-riparians above and beyond that which is stipulated in international water law and any other relevant treaties to which India is signatory.

India and Bhutan

In stark contrast to India's occasionally troubled relationship with Nepal is India's apparently symbiotic one with Bhutan. Bhutan's water abundance and topography contribute to the country's propitious energy situation, namely hydropower production. Bhutan's dams have been developed with foreign aid, primarily from India, and it is India that is the largest customer of Bhutanese hydropower.[89] India is connected to the Bhutanese hydropower through the 336 MW Chukha project, as well as the Kurichu, Chukha Stage II projects, and the 1,000 MW Tala Dam.[90]

The collaborative and seemingly friendly nature of the relationship between Bhutan and India in regards to transboundary water resource management can be attributed more to Bhutan's far-sightedness and political adeptness than to India's attempts are creating more equitable regional relations. India, of course, can use the utilitarian mechanism and elicit compliance from Bhutan (and, indeed, Nepal) because Bhutan is heavily dependent on India for trade and almost entirely reliant on India for navigation and transport routes.[91] But Bhutan has been able to turn that to its own advantage.

For Bhutan, the assistance gained from India in developing its hydropower capacity has been crucial in the socio-economic development of the country. Indeed, Bhutan has the distinction of achieving the highest per capita income in South Asia by exploiting its hydropower reserves through environmentally sound projects, mostly small in scale and based on run-of-the-river

[87] Ibid., pp. 559-60.
[88] Ramaswami R. Iyer, 2008, 'Floods, Himalayan Rivers, Nepal: Some Heresies', *Economic and Political Weekly*, vol. 43, no. 46 (15-21 November 2008), p. 39; Chellaney, *Water: Asia's New Battleground*, p. 283.
[89] Nexant SARI/Energy, 'Regional Hydro-power Resources: Status of Development and Barriers: Bhutan', USAID-SARI/Energy Program, September 2002, p. xiii.
[90] Shah, 'Ganges-Brahmaputra', pp. 28-9.
[91] Kishore C. Dash, *Regionalism in South Asia: Negotiating Cooperation, Institutional Structures* (New York: Routledge, 2008), p. 76.

technology, which it then exports to India.[92] Export of hydropower brings in more than half of Bhutan's total revenue.[93] India has not begrudged Bhutan these benefits, and perhaps its willingness to facilitate mutually beneficial outcomes with a cooperative partner could serve as a model for similar cooperation with Nepal in due course. This illustrates that the presence of a hydro-hegemon need not lead to zero-sum games. Bhutan has been able, despite its relative weakness, to manage transboundary water interactions in a way that creates positive sum outcomes.

India and Bangladesh

Of all the South Asian states, Bangladesh is in the weakest negotiating position with India. It is also the most likely to suffer the most dire consequences of river diversions upstream and transboundary water resource mismanagement. Bangladesh's external water dependency (the percentage of water that originates outside a country's political borders) is 91.33 per cent and thus one of the highest in the world. Yet its per capita freshwater availability (7,569 cubic metres per year) is almost five times higher than India's.[94] This, however, is as much a curse as it is a blessing. Bangladesh's low elevation makes it prone to flooding during the monsoon season, and also prone to drought during the dry season between January and May. Management of shared river resources is therefore particularly critical for Bangladesh.[95]

Bangladesh is criss-crossed by 230 major rivers, with fifty-four of them (especially the largest ones) flowing in from India. Watercourses cover 7 per cent of the country's total land area. The Brahmaputra is the most important river of Bangladesh, but the Ganges and Meghna are also significant.[96] The Ganges-Brahmaputra-Meghna basin sustains approximately 10 per cent of the world's population, but is also one of the poorest regions in the world.[97] This poverty makes Bangladesh particularly vulnerable to the deleterious effects of upstream water engineering, such as large hydropower dams in the Himalayas and numerous diversions and water-storage dams in the middle and lower portions of the Ganges. These upstream hydro-engineering projects have caused massive side effects for Bangladesh, including dislocation of human communities, loss of resources such as fishery stocks, and increased hazards from flooding, to saltwater incursions and erosion of the Ganges delta.[98] Bangladesh is always on the receiving end of these disasters, and so it is all the more important for it to reach

[92] Chellaney, *Water: Asia's New Battleground*, p. 285.
[93] Nexant SARI/Energy, *Regional Hydro-power Resources*, p. xiii.
[94] Chellaney, *Water: Asia's New Battleground*, p. 172.
[95] Condon et al., 'Resource Disputes in South Asia', p. 8.
[96] Chellaney, *Water: Asia's New Battleground*, p. 172.
[97] Shah, 'Ganges-Brahmaputra', pp. 17-22.
[98] Ellen Wohl, 'The Ganga—Eternally Pure?', GWF Discussion Paper 1208 (Canberra: Global Water Forum, 2012), p. 3.

agreements that affect water flow upstream. It is also a high priority for Bangladesh in developing a constructive domestic water policy and attaining development goals associated with this.[99]

There is much criticism of the water-sharing arrangements between India and Bangladesh, which are seen as inequitable and symptomatic of the broader relationship between the two countries. India has aggressively asserted its own interest to the detriment of Bangladesh. The Indian perspective, in contrast, asserts that Bangladesh has been unwilling to compromise and has expected that its share of water resources will always remain undiminished.[100] There is also a perception within Bangladesh that India secretly diverts a portion of the Ganges upstream during dry months, causing acute water stress and environmental damage to Bangladesh. The Indian External Ministry counter-claims that it releases more water than is Bangladesh's genuine requirement and that Bangladesh exaggerates its needs.[101]

Bangladesh is also frustrated by exclusion from Indian and Nepalese negotiations over the Sapta-Koshi barrage despite the project having implications for Bangladesh. Bangladesh has proposed all three countries should work together because the diversion of the Ganges will affect water flow to Bangladesh during the dry season. Yet to date all discussions over the dam, which will likely produce 3,500 MW, have remained bilateral between India and Nepal.[102]

An example of the hydro-hegemon instigating a treaty that institutionalises an inequitable status quo is India's signing of the double bilateral Ganges River treaties with Nepal and Bangladesh. The treaties helped maintain the status quo in favour of India and may be viewed as exclusionary devices within an inclusive process, which did confer some benefits onto the other, weaker riparians.[103] India is likely to continue its pattern of resolving its water disputes with Bangladesh through bilateral negotiation rather than a regional approach.[104] As hydro-hegemon, it is able to set the terms of cooperation and Bangladesh is likely to continue consenting to this stable arrangement.

A point of major discord between India and Bangladesh is the Farraka barrage. The barrage diverts water from the Bhagirati-Hoogli river system to flush out sediment from Calcutta, but Bangladesh argues that this harms the agro-ecological and economic wellbeing of southern Bangladesh.[105] The

[99] Condon et al., 'Resource Disputes in South Asia', p. 41.
[100] Hill, 'Boundaries, Scale and Power in South Asia', p. 92.
[101] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 35.
[102] Ibid., p. 34.
[103] Zeitoun, Mirumachi and Warner, 'Transboundary Water Interaction II', p. 163.
[104] Condon, Hillman, King, Lang and Patz, 'Resource Disputes in South Asia', p. 40.
[105] Ibid., p. 10.

Farraka barrage embodies all that is wrong in the water relationship between Bangladesh and India. It disregards Bangladesh's ecology, water needs and the survival of its people. It is therefore seen as unfair treatment meted out and the disregard shown to a smaller country by a 'big brother'.[106]

A second significant dispute between India and Bangladesh is over the proposed National River Linking Project, which Bangladesh claims will lead to flooding in Bangladesh and intensify the country's dry season.[107] Conceived in 1982, the megaproject would transfer 178 billion cubic metres of water from India's northern rivers including the Ganges and the Brahmaputra to the drier southern rivers through thirty diversion projects, including 3,000 storage reservoirs and 14,900 km of canals. The plan had been dormant for two decades but was revived in 2002 when India ordered that the entire project be completed by 2016, a timetable that has no chance of being met.

One reason that India gives for the urgency of the project is the need to increase the country's irrigation capacity in order to meet the growing demand for grain, which, by 2050, would have to be sufficient to feed an estimated 1.5 billion people.[108] India is also an irrigation intensive country,[109] and the National River Linking Project might provide enough water to increase irrigated farmland by more than 50 per cent and to power 34,000 MW of hydropower capacity.[110]

If this project comes to pass, it may increase hydropolitical tensions in South Asia. Like Bangladesh, Pakistan and Nepal have voiced their opposition.[111] The National River Linking Project has also been met with widespread criticism by environmentalists and protests within India.[112] It remains unclear, however, to what extent the regional fears about the projects are justified, and to what extent they are a manifestation of anti-Indian sentiment pervasive in South Asia.

Conclusion

India is the hydro-hegemon in various guises to Pakistan, Nepal, Bhutan and Bangladesh. It is often perceived as a bully, but when analysed closely, its actions are conducive to stability rather than conflict. This is not to say they are always equitable for all stakeholders, but they are unlikely to incite a water war. India does not dominate water interactions in the region, nor

[106] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 20.
[107] Condon et al., 'Resource Disputes in South Asia', p. 11.
[108] Pau Khan Khup Hangzo, 'Transboundary Rivers in the Hindu-Kush-Himalaya (HKH) Region: Beyond the "Water as Weapon" Rhetoric', NTS Insight, Centre for Non-Traditional Security Studies, September 2012, pp. 4-5.
[109] Chellaney, *Water: Asia's New Battleground*, p. 211.
[110] Pearce, *When the Rivers Run Dry*, p. 223.
[111] Hangzo, 'Transboundary Rivers in the Hindu-Kush-Himalaya (HKH) Region', pp. 4-5.
[112] Singh, *Trans-boundary Water Politics and Conflicts in South Asia*, p. 21.

does it achieve its hydro-hegemony through coercion. It does have a strong and long-standing preference for bilateralism, which generally favours the hydro-hegemon. Its insistence on maintaining strictly dyadic relations has not been challenged by sub-regional groupings or multilateral institutions in South Asia, though capacity arguably exists for the development of such bulwarks to India's power. Instead, India has used soft power, and normative and utilitarian mechanisms to elicit compliance from its co-riparians while its superior power position effectively discourages any violent resistance against the status quo.[113]

In short, India's hydro-hegemony has created consent and stability in the transboundary water interactions in South Asia thus making water wars unlikely. Tensions certainly exist about the management and development of shared rivers, but declared war or violent skirmishes are likely to undermine the complex system of mutually beneficial arrangements that currently exist. Such a state of affairs can be said to epitomise the ambiguous nature of transboundary water interactions; conflict and cooperation always coexist, but an equilibrium is possible that precludes water war.

Understanding these nuances of transboundary water interactions in South Asia will assist Australia in developing a conflict assessment that is neither unnecessarily alarmist nor simplistic. Australia is strongly placed to bring this sophisticated view to the regional initiatives for transboundary water cooperation it has engaged in, namely the South Asia Water Initiative and the India-Australia Water Science and Technology Partnership. There is an opportunity for Australia to provide a counterpoint to the proponents of the alarmist and counterproductive water wars thesis, and it should be taken. Australia must appreciate India's powerful position in the transboundary water management in South Asia—and understand that while hydro-hegemony may act as a safeguard against the prospect of water war, it does not necessarily create equitable outcomes for the weaker parties.

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[113] Zeitoun and Warner, 'Hydro-Hegemony', p. 437.