

The Thirsty Dragon: the regional impact of China's water security requirements ¹

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Introduction

Water is essential for human well-being and continued socio-economic development. Climate, poverty, hunger, health and finance are interconnected through water. The global demand for water is projected to increase by 55 per cent by 2050 as a result of the requirements of industry, energy production and domestic use.²

China has 20 per cent of the world's population but less than seven per cent of its freshwater resources; by 2030, it is predicted that China's freshwater shortage will exceed its current annual consumption.³ Faced with such shortages, countries typically have no choice but to make trade-off decisions in relation to usage, quality and quantity. Indeed, in order to maintain its economic growth, China has already done just that, particularly as a result of the depletion of a number of its aquifers and the serious pollution of other water sources.⁴

In a 2013 report, the Asian Development Bank noted that growing economies, such as China's and that of other emerging Asian countries, experience the paradoxical trade-off decision of:

[N]eeding to boost food, industrial and energy production with a decreasing per capita availability of water ... partly because the natural resources are limited and partly because of the persistent use of environmentally debilitating modes of production in the region, including over extraction and/or pollution of basic resources.⁵

China's economic growth cannot be sustained without water security. Water security is defined as 'the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water related risks to people, environments and economies'.⁶ The nexus between water security and socio-economic requirements is contained in the definition of comprehensive security; namely that 'a nation's security is no longer the traditional "national defense" (military security) but has economic, environment and human dimensions' as well.⁷

This article contends that in the next ten years, China's water security requirements have significant potential to impact on stability in the region, broadly defined as the Indo-Pacific.⁸ To support this contention, it will demonstrate why water security is a strategic security issue for China, analyse China's responses to its water security requirements, and highlight the implications for the region of actions already undertaken by China, particularly in relation to India and countries on the Mekong River. It concludes by offering some options to reduce tensions that otherwise may result in regional instability.

Water is a strategic issue for China

China's water resources are unevenly distributed. The north of China is considered China's 'breadbasket', with 64 per cent of its land under cultivation. However, this area has insufficient and variable rainfall, with only 19 per cent of the country's water resources, while the south of the country often experiences serious flooding.⁹ China's population is predicted to continue to grow until 2030, peaking at 1.5 billion, which will place further demand on its water resources.

Coupled with this, China faces issues associated with urbanisation, including a diminishing workforce in its agricultural sector and a reduction of available arable land, resulting in increased reliance on food imports. The agricultural sector remains a significant user of water, with the north of China reliant on depleting aquifers or on water provided by diversionary projects. In addition, 40 per cent of China's freshwater rivers are seriously polluted, with 20 per cent containing water too polluted for human consumption.¹⁰

The availability and quality of water is seriously impacting the Chinese economy, with the UN estimating that in 2005 China experienced ‘an annual loss of \$28 billion in industrial output’.¹¹ The World Bank similarly estimated in 2009 that these issues were costing China 2.3 per cent of its national GDP,¹² while another report contended that the quantity and quality of water in China posed a threat to ‘food security, poverty reduction and future ecological sustainability’.¹³

For its part, China has acknowledged the importance of water security as a continued requirement for economic growth, illustrated through the introduction in 2002 of China’s *Water Law*, which was enacted:

[F]or the purposes of rationally developing, utilizing, conserving and protecting water resources, preventing and controlling water disasters, bringing about sustainable utilization of water resources and meeting the need of national economic and social development.¹⁴

Water security will increasingly be a strategic, socio-economic challenge for China, particularly over the next ten years, as population growth peaks and there are increased domestic demands for the economy to be sustainable. Fortunately, China has a geographical advantage in that almost all of the major rivers of Asia originate in glacial run-off from the Chinese-controlled Tibetan Plateau. The Yangtze and Yellow Rivers flow into China, the Mekong River flows to Thailand, Vietnam, Laos and Cambodia, the Salween and Irrawaddy Rivers to Myanmar, and the Brahmaputra and the Sutlej Rivers to India, Pakistan and Bangladesh.

However, while these rivers originate in China, they are considered ‘trans-boundary’ water resources, that is, ‘freshwater (surface and groundwater) that flows across national or sub-national boundaries’.¹⁵ To add further complexity to the water security issue, climate change is impacting the glaciers of the Tibetan plateau, and the longevity of glacial melts, as a source of water, is problematic.¹⁶ Therefore, any action that China takes on trans-boundary rivers, for its national water security requirements, will have significant consequences in relation to the availability and future sustainability for downstream countries. It is this issue that makes China’s water security requirements a strategic issue for the region.

China’s development projects

China has undertaken significant infrastructure development in relation to water resources, demonstrating its intent to achieve water security, particularly for energy, irrigation and mineral resource extraction.¹⁷ In a number of cases, however, it would seem that China’s actions in relation to trans-boundary rivers have occurred with little transparency and inadequate consultation with neighbouring countries.¹⁸

In particular, China has invested in significant damming and water diversion projects. For example, it has built the well-known Three Gorges Dam on the Yangtze River, undertaken a major water transfer project to divert 44.8 km³ of water from the south of China to the north at a cost of US\$40-60 billion, has plans to build three major dams on the Brahmaputra River, and has already built three of 15 planned hydroelectric dams along the Mekong River.¹⁹ Prior to 1949, China had 22 dams—today, the total number is estimated at +90,000.²⁰

China’s water diversion projects often have significant adverse impact on downstream countries and consequently impact on state-to-state relations. During the period 2000-2005, for example, India experienced the physical effects of China having built upstream dams, with a number of floods in Himachal Pradesh and Arunachal Pradesh the result of unexpected upstream dam water releases. China provided no prior notification to India of the releases, precluding the implementation of flood mitigation measures. The breach of China’s Yiong Dam on the Sutlej River in mid 2005, for example, resulted in 35,000 homeless people and 26 dead.²¹

In 2006, India raised with China the lack of notification of dam breaches, seeking more transparency in environmental impacts and risk assessments.²² However, Chinese officials were reportedly only prepared to discuss hydrological data, and were not willing to enter into any water sharing or dam construction agreements. So, despite the significant social impact of the floods, India’s diplomatic actions to redress these issues had limited effect.

Furthermore, China has already built one dam on the Brahmaputra River, and has plans to build an additional three, which collectively will have considerable ramifications for India over the next ten years.²³ The Brahmaputra is a significant water source for India, and it is estimated that the current and planned Chinese dams will result in '[a fall of] as much as 60 per cent of the total water flow ... [and] that fifteen to twenty small and medium rivers dependent on the Brahmaputra will die if China's plan succeeds'.²⁴

India faces similar population growth, urbanisation, energy demand and economic challenges to China.²⁵ Therefore, with both India and China relying on the same water source, and China already acting unilaterally, further and heightened competition for water resources seems inevitable. Moreover, such competition may well exacerbate a number of geopolitical issues that already exist between China and India, particularly in the Arunachal Pradesh region, in turn increasing the likelihood of regional instability.

Elsewhere, China's actions are being replicated on the Mekong River, with significant potential impact on Cambodia and Vietnam, and the estimated 60 million people who live in the lower Mekong Basin, where:

[T]he river is essential for drinking water, food, irrigation, hydropower, transportation and commerce. Nearly 2% of the total world catch and 20% of all fish caught from inland waters of the world are produced in the lower Mekong fisheries. Nearly half of Cambodia's people rely on the Mekong River, and the delta supports more than half of Vietnam's rice production and one third of Vietnam's GDP.²⁶

Therefore, any water diversion of the Mekong River has the potential to impact the livelihood of a substantial proportion of the population, as well as the economy, of several countries. It is China's approach to the management of trans-boundary rivers, often at the expense of other stakeholders, which clearly has considerable capacity to exacerbate existing geopolitical suspicion and tension, and impact regional instability.

To date, China has not signed any international water treaties, nor joined the Mekong River Commission—established by Cambodia, Laos, Thailand and Vietnam in 1995—despite the significance of the Mekong River to the livelihood of downstream countries.²⁷ The Commission was designed as a forum to 'promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well being' between the member countries.²⁸ Furthermore, China was one of only three countries that voted against the 1997 UN Convention of Non Navigational Use of International Waterways, a universal treaty on the management of freshwater resources.²⁹

Instead, China takes a sovereign or unilateral approach to water security, asserting the right of states to harness the potential of national resources, while rejecting the notion that states have the right not to be adversely affected in their development potential by the activities of upstream riparian countries.³⁰

Nevertheless, there have been some minor concessions in China's behaviour. China attended its first Mekong River Commission summit in 2010 and signed a memorandum of understanding with the Commission on the provision of hydrological data from Yunnan province, aimed at preventing the loss of life during the flood season.³¹ However, China's preference, at least in relation to the Mekong River, seems to be bilateral economic and energy deals with individual countries,³² which largely undermines the Mekong River Commission as an effective water management forum.

More broadly, China has proposed further dialogue and partnership through ASEAN-China Free Trade Agreement collaboration on issues such as 'environmental impact assessments ... and joint work on regional natural disaster reduction capacity building'.³³ However, to date, the dialogue has related to information sharing about hydrological data and environment information, and does not extend to agreements, treaties or cooperation on water quality or quantity issues, reinforcing China's unilateral approach to water security.

So is conflict likely?

While China's unilateral actions and lack of transparency over the use of trans-boundary river sources may contribute to regional instability, no modern state has ever declared war on another solely over water. A 2014 report from the UK Ministry of Defence, however, has highlighted the increased potential

globally for confrontation over shared water resources,³⁴ while another report, based on a study of almost 2000 water-sharing arrangements in the period 1948 to 1999, showed that 28 per cent resulted in conflict, while two-thirds featured ongoing cooperation.³⁵

The historical evidence, therefore, would suggest that water-sharing arrangements, either through treaties or dialogue, have a useful role in reducing the likelihood of confrontation. An example of a water treaty that has enabled cooperation and withstood geopolitical state conflict is the Indus Waters Treaty, brokered by the World Bank between India and Pakistan.³⁶ India also has water-sharing arrangements with Nepal, Bhutan and Bangladesh. While these arrangements may favour India, it can be argued that the existence of the arrangements is 'conducive to stability rather than conflict'.³⁷

An alternative perspective is that China can be regarded as a 'hydro hegemon', and that 'its position in the trans-boundary river systems and its potential for water resource exploitation ... prevents war ... because non-hegemonic states usually comply with the order preferred by the hegemon'.³⁸ However, examples such as the Indus Water Treaty demonstrate that water treaties can provide a practical and rational legal framework for resolving disputes, even when they involve a regional hegemon such as India. Contrarily, the absence of such agreements or institutional forums for resolving disputes typically creates an environment of uncertainty and contributes to existing geopolitical regional instability.

Therefore, even though no physical conflict over water has occurred between China and India or countries in the Mekong River basin, it is assessed that it is likely, within the next decade or so, to become a source for potential conflict, particularly as water becomes an increasingly scarce and valuable resource. As asserted by Uttam Sinha:

[T]he absence of a cooperative arrangement in most Asian trans-national basins is making trans-boundary water competition a major security risk.... Institutionalized cooperation ... is needed in order to underpin strategic stability, protect continued economic growth and promote environmental sustainability.³⁹

The way forward

Because water security is a potential future source of conflict, the region should work towards achieving a trans-boundary rivers management framework. Potentially, this could occur through security dialogue discussions at either the East Asia Summit or the Shangri La Dialogue (conducted regionally under the auspices of the UK-based International Institute for Strategic Studies).

Any dialogue would need to develop a framework covering dispute-resolution mechanisms, and principles for sustainable development, cooperation and transparency to reduce the likelihood for conflict. Moreover, rather than considering trans-boundary rivers as sovereign resources, any framework should also consider the rivers through a regional lens, which would require a multilateral approach involving input and collaboration between all countries through which the rivers flow.

While China in particular may well be wary of involving non-regional parties, especially the US, the US Agency for International Development has particular expertise in similar issues, and would be well suited to join with the Mekong River Commission in joint planning and the development of sustainable management practices.⁴⁰ As asserted by a UN report in 2006:

Water is not a zero sum game.... Two overarching challenges define trans-boundary water governance strategies.... The first is to move beyond inward-looking national strategies and unilateral action to shared strategies for multilateral cooperation.... The second is to put human development at the centre of trans-boundary cooperation and governance.⁴¹

Furthermore, it could be expected that in the years ahead, continuing research and investment in new technologies will be able to deliver alternative water sources through mechanisms such as desalination, at reduced cost of production, which could provide alternatives to trans-boundary river damming or diversions, and assist with water security challenges.⁴²

Conclusion

Water security is a strategic issue and a critical element of national security. It has been argued in this article that water security will increasingly become a key issue for countries of the Indo-Pacific region, both because it has the potential to contribute to already existing geopolitical tensions and as a potential source of conflict in its own right.

Of particular concern is that China's water security requirements will increasingly impact on the region, specifically with India and countries of the Mekong River basin over the next decade. China's unilateral approach to trans-boundary rivers, its lack of transparency over its future plans, and the absence of water treaties contribute to regional instability. Furthermore, China's behaviour, as the 'thirsty dragon' of the region, creates an environment of uncertainty and water resource competition. This, combined with the physical effects of water diversions and damming, has the potential to exacerbate geopolitical issues within the region.

Although water security is a potential source of conflict and can cause regional instability, it has also been argued that history would suggest that modern states do not engage in conflict over water alone. However, in the next ten years, water security will be further compounded because of population growth in the region and the uncertain impact of climate change on glacial activity in the Tibetan Plateau as a source of water.

To mitigate water security as a potential source of regional conflict, the article has argued that countries should work together, either through the East Asia Summit or Shangri La Dialogue, to create a multilateral river basin management water treaty and share technological solutions for alternative methods of achieving water security. Such an approach would require China to review its current unilateral approach to trans-boundary water resources. And it may require the involvement of non-regional states, with expertise in such issues, to help facilitate the strategic dialogue.

Colonel Natasha Fox graduated from the Royal Military College, Duntroon in 1991, into the Royal Australian Army Ordnance Corps. Her early career included postings to several corps-related appointments, an instructor at ADFA, and aide-de-camp to the Chief of Army, as well as Project Director for the dedication of the Australian Korean National War Memorial. Her more recent postings have included Headquarters Logistic Support Force, Special Operations Command, Headquarters Training Command-Army and Commanding Officer/Chief Instructor at ADFA. In 2013, she was the Director of Personnel Policy-Army.

Colonel Fox has operational experience with the UN Truce Supervision Organisation, serving in Lebanon and Syria. She also deployed on Operation SLIPPER during the period June 2012 to January 2013. Colonel Fox is a graduate of the 2003 Australian Army Command and Staff College and has a Bachelor of Arts, a Master of Business Administration (University of Southern Queensland) and a Master of Management in Defence Studies (University of Canberra), as well as being a graduate of the Australian Institute of Company Directors. She is currently attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College.

Notes

- 1 This is an edited version of a paper, titled ‘The Thirsty Dragon: Will China’s Water Security Requirements Impact on Stability in the Indo-Pacific Region?’, submitted by the author while attending the Defence and Strategic Studies Course at the Centre for Defence and Strategic Studies at the Australian Defence College in 2015.
- 2 UN World Water Assessment Programme, *The United Nations World Water Development Report 2014: water and energy*, Vol. 1, UNESCO: Paris, 2014, p. 2.
- 3 T. Hofstedt, ‘China’s Water Scarcity and Its Implications for Domestic and International Stability’, *Asian Affairs, an American Review*, Vol. 37, No 2, 2010, p. 1.
- 4 China has had in the order of 7.4-7.7 per cent growth for the last three years; for 2015, it is predicted at 6.7 per cent. The interdependency in Asian economies, and particularly their reliance on China, makes Asia more vulnerable to any sharp slowdown in the Chinese economy: see International Monetary Fund (IMF), *World Economic Outlook*, IMF: Washington DC, October 2014 p. 2 available at <www.imf.org/external/publ/ft/weo/2014/02/pdf/text.pdf> accessed 3 March 2015. See also J. Boulter, ‘Food and Water Security: China’s most significant national challenge’, Future Directions International website, 2013, p. 3, available at <<http://www.futuredirections.org.au/publications/food-and-water-crises/873-food-and-water-security-china-s-most-significant-national-challenge.html>> accessed 29 May 2015.
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- 6 D. Grey and C. Sadoff, *Sink or Swim? Water security for growth and development*, The World Bank: Beijing, 2007, p. 1.
- 7 J. Hauger, M. Daniels and L. Saalman, ‘Environmental Security and Governance at the Water Energy Nexus: Greenpeace in China and India’, *Journal of Asian Security and International Affairs*, Vol. 1, No 3, 2014, p. 236.
- 8 This definition is used to provide geographic and relationship context for country interactions, recognising that economic and security considerations between the Western Pacific and Indian Oceans are creating a single strategic system. The definition includes Asia and India within the Indo-Pacific region: see R. Medcalf, ‘The Indo-Pacific: what’s in a name?’, *The American Interest*, Vol. 9, No 2, October 2013, p. 1.
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- 10 Boulter, ‘Food and Water Security’, pp. 2-4.
- 11 Chellaney, *Water Asia’s New Battleground*, p. 54.
- 12 T. Lutterell, *Food and Water Security: Our Global Challenge Landmark Study*, Future Directions International: Perth, 2014, p. 29.
- 13 UN Development Programme, *Beyond Scarcity: power, poverty and the global water crisis*, UN Development Programme: New York, 2006, p. 143, available at <<http://hdr.undp.org/sites/default/files/reports/267/hdr06-complete.pdf>> accessed 4 March 2015.
- 14 Ministry of Water Resources, *Water Law of the People’s Republic of China*, People’s Republic of China: Beijing, 2002, p. 1.
- 15 C. Sadoff *et al* (eds.), *Share: managing water across boundaries*, International Union for Conservation and Nature and Natural Resources: Gland, 2008, p. 15, available at <<https://portals.iucn.org/library/efiles/documents/2008-016.pdf>> accessed 29 May 2015.
- 16 U.K. Sinha, *Emerging Strategic Trends in Asia*, Institute for Defence Studies and Analysis: New Delhi, 2015, p. 178.
- 17 Chellaney, *Water Asia’s New Battleground*, p. 132.
- 18 N.K. Tripathi, ‘Hydropower in Asia: spinning a dependence and interdependence binary’, *South Asian Survey*, Vol. 17, No. 2, 2010, p. 225, available at <<http://sas.sagepub.com/content/17/2/219.short>> accessed 3 March 2015.
- 19 See, for example, B. Chellaney and J. Turner, *Panel Discussion Water: Asia’s new battleground*, Brookings Institute: Washington DC, 2013.
- 20 Chellaney and Turner, *Panel Discussion Water*, p. 20.

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- 22 Chellaney and Turner, *Panel Discussion Water*, p. 27.
- 23 J. Di Nunzio, *India Fast-Tracks Hydropower Dams in Response to China's Brahmaputra River Diversion*, Future Directions International: Perth, 4 December 2013, available at <<http://www.futuredirections.org.au/publications/food-and-water-crises/28-global-food-and-water-crises-swa/1474-india-fast-tracks-hydropower-dams-in-response-to-china-s-brahmaputra-river-diversion.html>> accessed 5 March 2015
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- 25 Sinha, *Emerging Strategic Trends in Asia*, pp. 162-85.
- 26 Economy, 'Asia's Water Security Crisis', p. 381.
- 27 Chellaney, *Water Asia's New Battleground*, p. 273.
- 28 Mekong River Commission website, available at <www.mrcmekong.org> accessed 3 March 2015.
- 29 Hofstedt, 'China's Water Scarcity and Its Implications for Domestic and International Stability', p. 78.
- 30 Economy, 'Asia's Water Security Crisis', p. 379.
- 31 Mekong River Commission website.
- 32 China signed oil transport deals with Thailand, Laos and Burma without consulting Cambodia or Vietnam: see Economy, 'Asia's Water Security Crisis', p. 381. China promotes the trade of electricity as an example of amicable international relations, providing Vietnam and Thailand with electricity from the dams of the Mekong: see Tripathi, 'Hydropower in Asia', p. 228.
- 33 J. Mochizuki and Z. Zhang, 'Environmental Security and its Implications for China's Foreign Relations', *Nota Di Lavoro*, 2011, p. 12.
- 34 UK Ministry of Defence, *Global Strategic Trends - Out to 2045*, 5th Edition, Ministry of Defence: London, 2014, pp. 22 and 180.
- 35 Lutterell, *Food and Water Security*, p. 79.
- 36 P. Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', *Security Challenges*, Vol. 10, No. 3, 2014, p. 103.
- 37 Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', p. 111.
- 38 Hanasz, 'Hydro-hegemony and Water Conflicts in Asia', p. 98.
- 39 Sinha, *Emerging Strategic Trends in Asia*, p. 196.
- 40 Economy, 'Asia's Water Security Crisis', p. 382.
- 41 UN Development Programme, *Beyond Scarcity*, p. 204.
- 42 Sinha, *Emerging Strategic Trends in Asia*, p. 187.