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ENVIRONMENTAL CHANGE AND RIPPLES FOR WATER SECURITY IN SOUTHERN ASIA

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Guest contributor

Environmental change is regarded by many geopolitical experts as one of the biggest threats to international security in the coming years. In Southern Asia, its impact on rivers, and thus water security, is projected to be substantial. Such change, exacerbated by China's water policies in the region that affect the flow of Tibetan rivers, could lead to increased socioeconomic, resource and political tensions. Against this background, this NTS Alert presents an overview of the impact of environmental change on the rivers of Southern Asia as well as on the existing river water sharing arrangements in the region; and argues that the future of these agreements could be imperilled by environmental change, particularly with the shifts being amplified by China's river water management policies.

The Brahmaputra, which flows through China, India and Bangladesh before meeting the Bay of Bengal, could be the focal point of water insecurity in Southern Asia.
Credit: Deepraj / Wikimedia Commons.

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Introduction

River water sharing has been a source of both cooperation and conflict since time immemorial. According to a UN survey, 'out of 200 international rivers, 70 percent of them are being shared by two countries' and over 1,000 water sharing treaties have been signed in the last 50 years (Kabir, 2005). Southern Asia exemplifies this reality: its major rivers are shared by two or more countries.

The discourse on the impact of climate change on water security has gained momentum in the past decade, especially with the revelation that 1.1 billion people worldwide have no access to safe drinking water (WHO and UNICEF, 2005). Besides climate change, human activities such as dam construction and deforestation could affect the flow of rivers, resulting in water stress and even scarcity.

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The possibility of both national and transboundary conflicts over the sharing of inadequate water resources has been raised by several studies, including the Third and Fourth Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC). In Southern Asia, China's activities on the Tibetan Plateau – the source of major rivers in the region – and its focus on controlling natural environments could trigger drastic environmental change, thereby aggravating the water security situation and sowing the seeds of intra-regional conflicts.

This NTS Alert argues that the future of river water sharing arrangements among Southern Asian countries could be endangered by environmental change, China's environmentally unfriendly activities as well as riparian politics.

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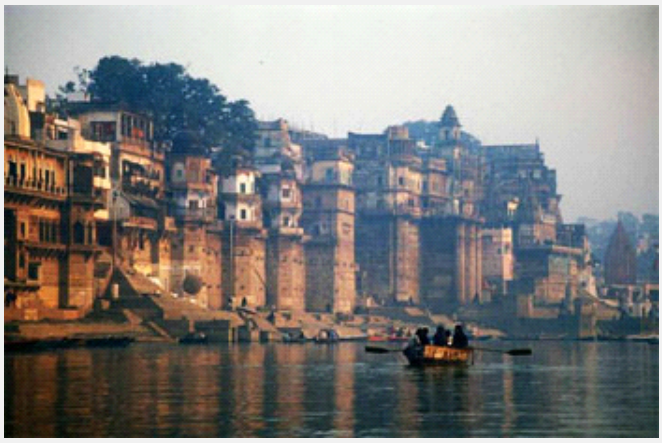
Environmental change and the future of water (in)security

Climate change is affecting the geophysical features of the Tibetan Plateau. Glacial retreat is being accelerated by rising temperatures, and seasonal snow cover is decreasing in length. According to the China Meteorological Administration, Tibet Province has had an average rise of 0.32 degrees Celsius every decade since records began in 1961, much higher than the national average rise of 0.05–0.08 degrees Celsius (Warming, 2009). The warming could, it has been argued, lead to the swelling of Tibetan lakes and increased run-off during the summers, and downstream areas could face floods in the short term and droughts in the long term. However, certain studies have revealed that the contribution of glacial melt to the region's rivers has been exaggerated. One such analysis shows that the meltwater contribution to the Indus amounts to 151 per cent of the water naturally caught in downstream areas. However, the meltwater contribution to the Brahmaputra is only 27 per cent and the Ganges just 8–10 per cent (Friedman, 2011). These numbers are inconsistent with doomsday scenarios of widespread drought and water scarcity (except in the case of the Indus).

Changes in precipitation have also had an effect on the region's rivers, as these rivers are fed to a significant extent by monsoonal rains. The Fourth Assessment Report of the IPCC notes that decreasing annual mean rainfall is being observed in North-east India, parts of Pakistan and China, while increasing rainfall is being seen in North-west India, Bangladesh and the Tibetan Plateau (IPCC, 2007). An intergovernmental study underlines the impact that declining precipitation levels caused by climate change could have on river run-off, stating that 'during 1998–2004 rainfall was 20–30% below the normal and the corresponding discharge shows −25% maximum change' (Muhammed et al., 2007).



The Ganges is one of the most polluted rivers in the world. River pollution could intensify the effects of environmental change on water security in the region.

Credit: Babasteve / Wikimedia Commons.

Compounding the impacts of environmental change are factors such as overuse, pollution and poor management, all of which have affected rivers, and thus water availability, in the region. In Pakistan, per capita availability of water is declining severely due to diminishing river flows. One study states that '[b]ased on current projections, the Indus River system is expected to fall below 2000 flow levels between 2030 and 2050' (Condon et al., 2009). According to another study, '[w]ater availability on per capita cubic metre basis is estimated to decline from 2150 at present to 1860 in 2030 in case of China, from 1730 to 1240 in case of India, from 7320 to 5700 in case of Bangladesh, from 8500 to 5500 in case of Nepal' (Strategic Foresight Group, 2010).

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The looming environmental threat of China's moves

The security of the almost 2 billion people residing in South and Southeast Asia would be threatened if the water resources of the Tibetan Plateau are altered. Yet, China's activities on the plateau such as constructing dams, cutting down forests and mining could do just that.

China's dams on the Tibetan Plateau

One of the characteristics of China's policy has been its endeavour to manipulate natural environments in pursuit of national goals. A Chinese hydraulics engineer, Professor Liu Zihui, speaking about the largest hydraulics project in the history of humanity, a USD63 billion canal that would bring water from southern China to the country's increasingly desertifying north, commented, 'I don't feel we are conquering nature. We think nature itself isn't fair. God isn't fair. What is that? He's given Southern China so much water but given the North so little. It's good land – nice flat land – up there. But it's got so little water. So we say, as God isn't fair, we are trying to balance out God's

unfairness' (Paskal, 2010). This mindset has been realised through extensive dam-building; China is already home to half of the world's roughly 50,000 large dams (Chellaney, 2011), with more to come. However, the construction of dams has important environmental consequences for rivers. China's Three Gorges Dam has been held responsible for worsening water pollution due to river depletion, sedimentation and increasing eutrophication (Gleick, 2009).

In the Tibetan Plateau, China has been increasingly diverting river water for different purposes – electricity generation, irrigation, mining and other economic activities. Take for instance the case of River Brahmaputra. Approximately, 354 billion cubic metres of waters flow from Tibet to India. Out of that, 131 billion cubic metres is accounted for in the Brahmaputra; and on this river alone, China is planning to build 28 dams (IDSA, 2010). China is planning to build the world's largest dam and hydropower station (that may or may not be a run-of-the-river project) on the Brahmaputra at the Great Bend, the place where the river takes a U-turn to enter the plains of Assam via Arunachal Pradesh in India.

India would not be the only country to experience the negative impacts of China's dams. Bangladesh would be affected by China's diversion of waters during the dry seasons, and perhaps also during monsoons when it would be vulnerable to greater flooding. Pakistan could also become a victim of China's damming strategy, as geography dictates that developments in Tibet that reduces the flow of the Indus (and its tributaries) would have carry-on effects for Pakistan.

The Tibetan Plateau is the source of all major rivers in Southern Asia. Thus, China's activities in that region have a significant impact on its neighbours downstream.

Credit: Hugo Ahlenius / Wikimedia Commons.

Deforestation and mining on the Tibetan Plateau

In addition to dam-building, deforestation and mining operations have also started to affect both the quantity and quality of water, particularly in the lower riparian countries. One study asserts that deforestation 'would lead to decreased transpiration and increased summer precipitation in the deforested area and a wetter and warmer climate on the Tibetan Plateau in summer. This may produce more runoff into the rivers originating from the Tibetan Plateau and worsen flooding disasters in the downstream areas' (Cui et al., 2007). Reports also suggest that Chinese copper mining operations at Qulong Mine is affecting the Brahmaputra (Chellaney, 2007).

These circumstances arising from upstream activities on the Tibetan Plateau make the role of negotiations essential, and the need for strengthening existing river water sharing arrangements and fostering new ones paramount. The prospects of these happening are explored in the next sections.

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Agreements and disagreements

Two of the most important treaties on river water sharing in the Southern Asian context are the Indus Waters Treaty (1960) brokered by the World Bank between India and Pakistan, and the Ganges Treaty (1996) signed by India and Bangladesh.

The Indus and its tributaries originate in China or India and that adds to Pakistan's vulnerability when it comes to its water security.

Credit: Kmhkmh / Wikimedia Commons.

Indus Waters Treaty 1960

Under the Indus Waters Treaty, Pakistan's share of the total Indus system is 80.52 per cent, leaving India with a 19.48 percent share (Chellaney, 2012). India was granted exclusive rights over the waters of the eastern rivers (the Sutlej, the Beas and the Ravi) and their tributaries before the point where they enter Pakistan, while Pakistan was given the rights over the waters of the western rivers (the Indus, the Jhelum and the Chenab) and their tributaries.

Tensions have arisen over the treaty, in Pakistan as well as India. India's reported plans to construct hydropower projects (permitted under the treaty) on the Indus (155 projects), Jhelum (74) and Chenab (56), the three rivers that were assigned to Pakistan under the treaty, are being perceived by Pakistani circles as a strategy by India to 'deprive Pakistan of its water rights' (Bhutta, 2011). These numbers have however not been confirmed by the Indian authorities. The two countries had earlier been engaged in disputes over several of India's projects that could affect the flow of the Chenab and Jhelum – the Baglihar dam, the Tulbul navigation project/Wular Barrage, and the Kishenganga dam.

The present treaty has also been extremely unpopular in India, and its government has been under constant pressure to review it and even compensate local residents for the losses (mainly agricultural) incurred on account of the treaty. Many analysts in India have also lambasted the treaty on the grounds that India signed it without an assessment of the future availability of water in the Indus system. The waters were plentiful at the time but are so no longer. Interestingly, former Pakistani President Pervez Musharraf has claimed that the Kashmir dispute was primarily based on the distribution of the Indus waters. He declared that '[i]f one were resolved, the other would not exist' (Pai, 2008).

Ganges Treaty 1996

The 1996 Ganges Treaty, a 30-year comprehensive agreement between India and Bangladesh, was arrived at after years of bickering over the Farakka Barrage. The Farakka, built by India chiefly to divert the Ganges waters into the Hooghly River during the dry season in order to remove the silt that was hindering the operations at the Port of Kolkata, had affected water flow to Bangladesh.

Under the treaty, India and Bangladesh agree to cooperate in terms of providing flood data and undertaking joint dredging to facilitate river navigation along main river routes. The treaty also provides for the distribution of water from the Farakka to the two countries during the dry season, that is, between January and May (Nishat and Pasha, 2001).

India has abided by the terms and conditions of the treaty while maintaining that the water allocated to it is not sufficient for the operation of Kolkata Port and the power plant in Farakka. Criticisms have also emanated from Bangladesh as a result of the effects of deforestation at the upper levels of the Ganges in India and Nepal. The deforestation has had cascading effects. It has intensified soil erosion, which has in turn led to increased deposits of silt at the lower levels and raised salinity levels. This has affected biodiversity, fisheries, navigation and water quality. Bangladesh has placed the blame for these effects, at least in part, on the diversion of water at the Farakka Barrage (Chowdhury, 2010).

Other cooperation mechanisms

India, Bhutan and Nepal have been cooperating in terms of multi-purpose dams for irrigation, control of floods and hydroelectricity. There is scope for greater cooperation but progress on this front has been hindered by delays in the implementation of projects.

Bangladesh has proposed a tri-nation initiative on common basin management of rivers that would include India, Bangladesh and Nepal (Dikshit, 2012). If this materialises, it would be a landmark sub-regional water sharing arrangement.

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Where does China stand on cooperation?

What complicates matters in the Southern Asian milieu is that China, which is the source of all the major rivers in the region, has not signed a single treaty with any of its neighbouring countries on river water sharing. This leaves the way open for China to exploit water as a bargaining chip at international and regional forums, using the resource strategically to persuade its lower riparian neighbours to support its agenda.

Although officials from India and China have held talks and China has agreed to share hydrological information through a Memorandum of Understanding on the Brahmaputra and the Sutlej, the absence of a treaty makes it next to impossible for India to verify China's claims. Accusations have been levelled against China in connection with flash floods in Arunachal Pradesh, which according to some reports were caused by a breach in an upstream dam in Tibet that raised the level of the Brahmaputra by more than 30 metres (Chinese official, 2000), but the lack of relevant data makes it difficult to prove (or disprove) the claims.

As far as international norms are concerned, China is one of three countries that voted against the 1997 UN Convention on the Law of the Non-Navigational Uses of International Watercourses. This suggests that China is not at the present time likely to engage in any form of cooperation at the international level.

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Conclusion

It is apparent from the above that current river water sharing arrangements in the region are inadequate when it comes to tackling the emerging problems brought about by environmental change and China's activities in Tibet.

Unfortunately, prospects for significant progress on the bilateral or multilateral fronts do not seem promising. Ideally, with water security emerging as a critical issue in India and Pakistan, the two countries should work towards integrated basin management. However, the historical baggage between the two countries and the inappropriate premises of the Indus Waters Treaty (which were based on partition) have ensured that meaningful levels of cooperation on joint projects are improbable at present. This is also the case with India and Bangladesh, where lack of political will and prevailing domestic politics have led to further avenues of cooperation being shelved. In the case of China, it does not at this stage have any incentive to enter into agreements with its neighbouring countries.

Nevertheless, with environmental change set to reshape the dynamics of river water sharing in Southern Asia, countries need to place greater priority on engaging with each other and finding new pathways for cooperation in order to ensure sustained water security in countries and for populations in the region, and to prevent an escalation of socioeconomic, resource and political tensions in the already politically volatile region. There is also a clear need for the current treaties to be revised, and further, for regional frameworks to be bolstered to tackle the challenges stemming from environmental change.

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