

Asia's Water Crisis and the New Security Risks*

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Water, the most vital of all resources, has emerged as a key issue that would determine if Asia is headed toward cooperation or competition. After all, the driest continent in the world is not Africa but Asia, where availability of freshwater is not even half the global annual average of 6,380 cubic metres per inhabitant.

When the estimated reserves of rivers, lakes, and aquifers are added up, Asia has less than one-tenth of the waters of South America, Australia and New Zealand, not even one-fourth of North America, almost one-third of Europe, and moderately less than Africa per inhabitant. Yet the world's fastest-growing demand for water for food and industrial production and for municipal supply is in Asia, which now serves as the locomotive of the world economy.

Today, in 2011, the fastest-growing Asian economies are all at or near water-stressed conditions, including China, India, South Korea, Vietnam, and Indonesia. But just three or four decades ago, these economies were relatively free of water stress. Now if we look three or four decades ahead, it is clear that the water situation will only exacerbate, carrying major implications for rapid economic growth and inter-riparian relations.

Yet Asia continues to draw on tomorrow's water to meet today's needs. Worse still, Asia has one of the lowest levels of water efficiency and productivity in the world. Against this background, it is no exaggeration to say that the water crisis threatens Asia's economic and political rise and its environmental sustainability. For investors, it carries risks that potentially are as damaging as non-performing loans, real estate bubbles, and political corruption. Water has also emerged as a source of increasing competition and discord within and between nations, spurring new tensions over shared basin resources and local resistance to governmental or corporate decisions to set up water-intensive industries.

These developments raise the question whether the risks of water conflict are higher in Asia than elsewhere in the world. With Asia becoming the scene of increasingly fierce intrastate and interstate water competition, the answer clearly is yes. Water is a new arena in the Asian Great Game.

In fact, water wars—in a political, diplomatic, or economic sense—are already being waged between riparian neighbours in several Asian regions, fuelling a cycle of bitter recrimination and fostering mistrust that impedes broader regional cooperation and integration. Without any shots being fired, rising costs continue to be exacted. The resources of transnational rivers, aquifers, and lakes have become the target of rival appropriation plans.

Please refer to the **map** showing 'Rivers of Tibet'. With a river or groundwater basin often becoming tied with a nation's identity, ownership and control over its resources is considered crucial to national interests. That has helped give rise to grand but environmentally questionable ideas—from China's Great Western Route to divert river waters from the Tibetan Plateau to its parched north and South Korea's politically divisive four-rivers project, to India's now-stalled proposal to link up its important rivers and Jordan's plan to save the dying Dead Sea by bringing water from the Red Sea through a 178-kilometre-long canal, which is also to serve as a source for desalinated drinking water.

Several factors have contributed to the Asian water crisis, which is leading to river and aquifer degradation. One key factor responsible for the water crisis is that Asia is not only the largest and most-populous continent but also the fastest-developing continent. How the swift economic rise of Asia has brought water resources under increasing pressure can be seen from the fact that most Asian economies now are water-stressed. The exceptions are few: Bhutan, Burma, Papua New Guinea, Laos, Cambodia, Brunei, and Malaysia.

Unlike fossils fuels, mineral ores, and timber that they import even from distant lands, the Asian economies must make do with their own water resources, a significant share of which is in transnational watercourses. This fact only serves as a strong incentive for some nations to try and commandeer internationally shared waters before they leave their national borders. Given the critical role of water in economic modernisation, this continent has emerged at the centre of the global water challenges.

Another factor is consumption growth, as a consequence of rising prosperity. The plain fact is that the average Asian is consuming more resources, including water, food, oil, and energy. The consumption growth is best illustrated by the changing diets, especially the greater intake of meat, whose production is notoriously water-intensive.

A third factor is the role of irrigation in accentuating the Asian water stress. Asia more than doubled its total irrigated cropland just between 1960 and 2000. Once a continent of serious food shortages and recurrent famines, Asia opened the path to its dramatic economic rise by emerging as a net food exporter on the back of this unparalleled irrigation expansion.

Asia now boasts the lionine proportion of the world's surface land under irrigation. About 70 per cent of the world's 301 million hectares of land equipped for irrigation is in Asia alone, making it the global irrigation hub. Just three sub-regions of Asia—South Asia, China, and Southeast Asia—by themselves account for about 50 per cent of the world's total irrigated land.

It is thus hardly a surprise that Asia leads the world in the total volume of freshwater withdrawn for agriculture. Indeed, almost 74 per cent of the total global freshwater withdrawals for agriculture by volume are made in Asia alone.

Water literally is food in Asia. Yet the growth of rice and wheat output in Asia, after the dramatic increases of the previous quarter century, has actually slowed since the late 1990s, raising concerns that Asian countries will become major food importers, roiling the international market. The international food market is not large enough to meet major import demands from Asia.

A fourth factor is that the fastest increase in water demand in Asia is now coming not from agriculture but from the industrial sector and urban households, in keeping with the fact that this continent has become the seat of the world's fastest industrialisation and urbanisation.

A final factor linked to Asia's water stress is the large-scale impoundment of water resources through dams, barrages, reservoirs, and other human-made structures without factoring in long-term environmental considerations. Dams, to be sure, bring important benefits. But upstream dams on rivers shared by two or more nations or provinces in an era of growing water stress often carry broader political and social implications, especially because they can affect water quality and quantity downstream. Dams can also alter fluvial ecosystems, damage biodiversity, and promote coastal erosion and saltwater intrusion.

Asia is not just the global irrigation hub; it is also the world's most dam-dotted continent. China, the world's biggest dam builder, alone has slightly more than half of the approximately 50,000 large dams on the planet. Most of the best dam sites in Asia already have been taken. Yet the numerous new dam projects in Asia show that the damming of rivers is still an important priority for policymakers. Such a focus on dam building has only intensified intrastate and interstate water disputes and tensions in Asia, with implications for regional security and stability.

The countries likely to bear the brunt of upstream diversion of waters are those located farthest downstream on rivers like the Brahmaputra, Mekong, and Tigris-Euphrates: Bangladesh, whose very future is threatened by climate and environmental change; Vietnam, a rice bowl of Asia; and Iraq, still internally torn. Cross-border water appropriations from the Illy River threaten to turn Kazakhstan's Lake Balkhash into another Aral Sea, which is dying.

So, the big question is: How can Asian nations prevent the sharpening struggle for water resources from becoming a tipping point for overt conflict? To contain the security risks, Asian states must invest more in institutionalised cooperation on transboundary basin resources in order to underpin strategic stability, protect continued economic growth, and promote environmental sustainability.

The harsh truth is that only four of the 57 transnational river basins in Asia have a treaty covering water sharing or other institutionalised cooperation. These are the Mekong, Ganges, Indus and Jordan river basins. The absence of a cooperative arrangement in most Asian transnational basins is making inter-country water competition a major security risk, increasing the likelihood of geopolitical tensions and instabilities.

India is downriver to China but upriver to Pakistan and Bangladesh. By entering into water-sharing treaties with both Pakistan and Bangladesh, India has set an example. In fact, its water treaty with Pakistan is the most-generous international agreement ever signed between any countries in modern world history. It is the most generous in terms of both the quantum of waters reserved for the downstream country as well as the sharing formula, which lopsidedly leaves for upstream India less than 20 per cent of the waters of the six-river Indus system. Despite the Indian water magnanimity, Pakistan has almost continuously waged overt or covert aggression against India since the Indus Waters Treaty was signed in 1960. And India has never made any effort to leverage its water-supplier role to dissuade Pakistan from waging aggression in any form.

China, by contrast, has no intention to emulate India's example in any manner. By expanding its borders, China has become the source of transboundary-river flows to the largest number of countries in the world — from Russia to India, and from Kazakhstan to the Indochina Peninsula. This status is because of its forcible absorption of sprawling ethnic-minority homelands, which make up 60 per cent of its landmass and are the origin of all the important international rivers flowing out of Chinese-held territory.

Getting this pre-eminent riparian power to accept water-sharing arrangements or other cooperative institutional mechanisms has proven unsuccessful in any basin. In fact, as epitomised by its planned or actual construction of a separate cascade of upstream dams on several major international rivers, including the Mekong, Salween, Brahmaputra, Arun, Irtysh-Ily, and Amur, China is increasingly headed in the opposite direction — toward unilateralist actions impervious to the concerns of downstream nations.

China is unlikely to take into account the water interests of India or any other downstream country. The plain fact is that when it comes to assertive pursuit of national interest, China has cared little about the potential impact on its image in other states. Its policies are designed to advance perceived national interests, not to seek approbation or appreciation from other states. As one influential Chinese academic put it to this writer, the choice Chinese policymakers have on diversion of Tibetan river waters is between slaking the thirst in China's parched north and "not offending" India and other downstream states — and "this choice is a pretty easy choice for Chinese decision-makers." China has already built a number of dams on rivers flowing to India, including the Brahmaputra, the Sutlej and the main Indus stream. These dams are not large. But the new large dams planned on the Brahmaputra and the Arun are likely to materially alter cross-border flows into India and Nepal.

It is important to note that no country in history has been a greater dam builder than China, which boasts not only the world's biggest dam (Three Gorges) but also more total number of dams than the rest of the world combined. Yet far from slowing its dam-building spree, China has stepped up its re-engineering of river flows in two ways: by portentously shifting its focus from internal rivers to international rivers, and by concentrating on mega-dams.

For example, its newest dams on the Mekong are the 4,200-megawatt Xiaowan — taller than Paris's Eiffel Tower and producing more electricity than the installed hydropower-generating capacity of all of the lower Mekong countries together — and the 5,850-megawatt Nuozhadu, which when complete will be even bigger in storage volume but not in height.

Last summer, China's state-run hydropower industry published a map of major new dams approved for construction, including one on the Brahmaputra at Metog (or "Motuo" in Chinese) that will be larger than even the 18,300-megawatt Three Gorges. India's largest dam — the 2,000-megawatt Tehri — pales in comparison with China's dams. The Metog Dam will have a devastating environmental impact on India's Assam plains and the eastern half of Bangladesh.

In the next one decade, according to international projections, the number of dams in the developed countries is likely to remain about the same, while much of the dam building in the developing world, in terms of aggregate storage-capacity buildup, will be concentrated in just one country — China. The consequences of such frenetic construction are already visible. First, China is now involved in water disputes with almost all its riparian neighbours, ranging from big Russia and India to weak clients like North Korea and Myanmar.

Second, its new focus on water mega-projects in the traditional homelands of ethnic minorities has triggered fresh tensions along ethnic fault lines over displacement and submergence issues at a time when the Tibetan plateau, Xinjiang and Inner Mongolia have all been racked by revolts or protests against Chinese rule. And third, Chinese projects threaten to extend the serious degradation of internal rivers to international rivers.

Yet, as if to underpin its rise as the world's unrivalled hydro-hegemon, China is also the largest dam builder overseas. From Pakistan-occupied Kashmir to Myanmar's troubled Kachin and Shan states, China has widened its dam building to disputed or insurgency-torn areas, even in the face of local backlash. Even as PLA units are engaged in dam

and other strategic projects in restive Gilgit-Baltistan, China's dam building inside Myanmar has contributed to renewed bloody fighting recently, ending a 17-year ceasefire between the Kachin Independence Army and the government.

For downriver countries, a key concern is China's opacity on its hydro-engineering projects. It usually begins work quietly, almost furtively, and then presents a project as holding transboundary flood-control benefits and as an unalterable fait accompli.

Worse still, China rejects the very notion of a water-sharing arrangement or treaty with any riparian neighbour. The terms "water sharing," "shared water resources," "treaty" and "common norms and rules" are an anathema to it. It is one of only three countries that voted against the 1997 UN Convention, which lays down rules on shared basin resources.

It is thus no accident that there are treaties among co-riparian states in South and Southeast Asia, but not between China and any of its neighbours. That the country with a throttlehold over the headwaters of major Asian rivers is also a rising superpower, whose muscular confidence is increasingly on open display, only compounds the regional security challenges.

In this light, China poses the single biggest obstacle to the building of institutionalised cooperation in Asia to harness internationally shared rivers for mutual and sustainable benefit.

With its multitude of inter-country basins, Asia cannot continue to prosper without building political and technological partnerships to help stabilise inter-riparian relations, encourage greater water efficiency, promote environmental sustainability, take on practicable conservation strategies, and invest in clean-water technologies. If Asian states are to address their water challenges, they will need to embrace good practices on the strategic planning and management of water resources.

* A slightly edited version of the talk delivered at USI on 28 Dec 2011 with **Vice Admiral Pradeep Kaushiva, UYSM, VSM (Retd)** in the Chair.

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