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## Testimony before the U.S.-China Economic and Security Review Commission

China has pursued an aggressive strategy to secure (and even lock up) supplies of strategic resources like water, energy and mineral ores. Gaining access to or control of resources has been a key driver of its foreign and domestic policies. China, with the world's most resource-hungry economy, is pursuing the world's most-assertive policies to gain control of important resources.

Much of the international attention on China's resource strategy has focused on its scramble to secure supplies of hydrocarbons and mineral ores. Such attention is justified by the fact that China is seeking to conserve its own mineral resources and rely on imports. For example, China, a major steel consumer, has substantial reserves of iron ore, yet it has banned exports of this commodity. It actually encourages its own steel producers to import iron ore. China, in fact, has emerged as the largest importer of iron ore, accounting for a third of all global imports. India, in contrast, remains a major exporter of iron ore to China, although the latter has iron-ore deposits more than two-and-half times that of India.

But while buying up mineral resources in foreign lands, China now supplies, according to one estimate, about 95 per cent of the world's consumption of rare earths — a precious group of minerals vital to high-technology industry, such as miniaturized electronics, computer disk drives, display screens, missile guidance, pollution-control catalysts, and advanced materials. In a calculated way, Beijing has cornered the international market for these strategic minerals, which include cerium, neodymium, lanthanum, yttrium and dysprosium. It built its virtual monopoly by first quietly making some major foreign investments to get hold of important processing and manufacturing technologies for rare earths, which it mines largely in Inner Mongolia.

The international focus on China's hydrocarbon and mineral-ore acquisition strategy, however, obscures the way it has systematically sought to corner the resources of international rivers. Its aggressive water strategy has resulted in water becoming a new divide in its relations with several of its neighbors, including India, Russia, Kazakhstan, and Vietnam.

Much of Asia is now at or near water-stressed conditions. This stress holds important implications for Asia's continued rapid economic growth, socioeconomic stability, and environmental sustainability. China's aggressive strategy is only helping to compound Asia's water challenges.

While China can scour the world for oil, natural gas, and mineral ores to keep its economic machine humming, it does not have the same choice on water, which cannot be secured through international trade deals. So, it has started damming international rivers in a major way.

To be sure, China faces a growing gap between water supply and demand. In the Han heartland, the south is water-rich but the north is plagued by serious water shortages. The north is largely semiarid, yet the introduction of large-scale irrigated agriculture has turned the north into a breadbasket. This has created a strange paradox: the north now is seeking to rely on water transfers from the south via the Great South-North Water Diversion Project while remaining a food exporter to the south.

China's over-damming of internal rivers and its inter-river and inter-basin water transfer projects are exacting heavy environmental costs, besides causing river depletion and pollution of water. With China

now shifting its focus to transnational rivers that flow to neighboring countries, there is a serious risk that these international rivers could also become seriously degraded.

Some water-related facts about China stand out. China, the geographical hub of Asia, is 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. It is thus an upper riparian vis-à-vis almost all its neighbors. This unique status is rooted in China's forcible absorption since 1949 of sprawling ethnic-minority homelands, which make up 60 percent of its landmass and are the origin of all the important international rivers flowing out of Chinese territory. The Tibetan Plateau, for example, is the world's largest freshwater repository and the source of Asia's greatest rivers, including those that are the lifeblood for mainland China and South and Southeast Asia.

Getting this preeminent riparian power to accept water-sharing arrangements or other cooperative institutional mechanisms has proved unsuccessful so far in any basin. Instead, its construction of upstream dams on several major international rivers, including the Mekong, Salween, Brahmaputra, Arun, Irtysh, Illy, and Amur, shows that China is increasingly headed in the opposite direction — toward unilateralist actions impervious to the concerns of downstream nations.

By building giant dams near the borders on the major rivers flowing to Southeast Asia, South Asia, and Central Asia, China is acquiring the capability to control cross-border flows and fashion water into a potential political weapon. Water is as essential as the air we breathe, and China is acquiring the capability to control the lion's share of Asia's cross-border river flows. This will give it tremendous leverage over its neighbors. In fact, with the rapid accumulation of Chinese economic and military power and the growing regional power asymmetry, Beijing has been emboldened to embark on water-diversion plans.

China's frenzied dam building, far from slowing, has only picked up more momentum in the name of increasing its renewable-energy capacity. Even with 25,800 of the world's approximately 50,000 large dams, China remains on a dam-building spree, with a plan to boost its hydropower-generating capacity from 170 gigawatts to 250 gigawatts by 2020. Renewable energy now serves as a useful plank to pursue what China has been doing for long — over-damming its rivers. The silting of the reservoir of the world's biggest dam, Three Gorges, has only prompted the construction of more dams upstream, including in ecologically sensitive areas, to help flush the silt.

The plain fact is no country in history has been a greater dam builder than China. The dam-building spree started under Mao Zedong but it has accelerated in the post-Mao period. Although China already boasts more dams than the rest of the world put together, it has recently unveiled a mammoth 4-trillion-yuan ($635-billion) fresh investment in water infrastructure over the next decade, more than a third of which will be utilized for building dams, reservoirs, and other water-supply structures. Its vice minister of water resources announced October 12, 2011, that the new investment would be aimed at harnessing the waters of the country's rivers, rebuilding or reinforcing more than 46,000 reservoirs, and extending the irrigation networks. The vice minister also admitted China's uncontrolled economic growth has left up to 40 percent of its rivers badly polluted and that the country faced "huge pressures" on supplies of water. "Industrialization and urbanization, including ensuring grain and food security, are exerting higher demands on water supplies ... while our water use remains crude and wasteful," Jiao Yong said at a press briefing.

Yet, China has stepped up its reengineering of river flows in two ways: by portentously shifting its focus from internal rivers to international rivers; and by graduating from building large dams to building mega-dams. For example, its newest dams on the Mekong River 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.

In mid-2010, China's state-run hydropower industry published a map of major new dams approved for construction, including one on the Brahmaputra River at Metog (or "Motuo" in Chinese) that is to be twice larger than the 18,300-megawatt Three Gorges Dam, which Beijing likes to trumpet as the greatest

architectural feat since the Great Wall was built despite the dam's increasingly damaging effects on the Yangtze River system. The Metog site is close to the disputed border with India.

Daduqia, almost on the border with India, has been officially identified as the site for another mega-dam to impound the Brahmaputra's waters. Both Metog and Daduqia are to harness the force of a nearly 3,000-meter drop in the river's height as it takes a sharp southerly turn from the Himalayan range into India. This area is in the Brahmaputra's "Great Bend," so called because the river there makes a hairpin-style turn around Mount Namcha Barwa, forming the world's longest and steepest canyon in the process. The Brahmaputra Canyon—twice as deep as the Grand Canyon in the U.S.—holds Asia's greatest untapped water reserves.

China's state-owned media has not tried to conceal the linkage between the ongoing infrastructure development in this remote, high-altitude region around the canyon and official plans to harness the Brahmaputra's resources. For example, Xinhua has quoted a tourism official as saying that the new highway from Metog to Bomi, which links up with the Sichuan-Tibet highway, will permit the tapping of the rich water resources in the Brahmaputra canyon. A high-altitude airport in Nyangtri city not far from these two dam sites has also been built. The next goal is to build a railroad to the region.

In addition, China has planned the "Great Western Route," the proposed third leg of the Great South-North Water Diversion Project, whose first two legs in the Han heartland are scheduled to be completed in 2014. The "Great Western Route," by contrast, is centered on the Tibetan Plateau. It is designed to take the waters of the Brahmaputra, the Salween, the Mekong, and three Yangtze tributaries to the Yellow River, the main river of northern China which also originates in Tibet. Work on the Great Western Route — or least some components of it — is likely to begin after the first two legs of the Great South-North Water Diversion Project are complete. Despite their staggering environmental and social costs, China is fast completing the first two legs. Along the middle route, which starts in Hubei Province and snakes 1,300 kilometers to Beijing, about 350,000 villagers are being relocated to make way for this diversion.

Yet another fact sticks out: 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, even North Korea, with which it shares two border rivers. Beijing reacted angrily to the recent decision of the government in Burma (Myanmar) to halt a controversial Chinese-led dam project on Burmese territory. The now-stalled $3.6 billion Myitsone Dam, located at the headwaters of Burma's largest river, the Irrawaddy, was designed to pump electricity into China's power grid, despite the fact that Burma suffers daily power outages. The State-Owned Assets Supervision and Administration Commission of China's State Council, in fact, had hailed Myitsone as a model overseas project serving Chinese interests. The Burmese decision thus shocked China's government, which had begun treating Burma as a reliable client state (one where it still has significant interests, including the construction of a multibillion-dollar oil and natural-gas pipeline).

China's upstream dam building on the Mekong on a massive scale has rightly attracted a lot of attention. . The Mekong, whose watershed is shared by six countries, is the lifeblood for continental Southeast Asia. Ignoring the concerns of downstream states, China has continued work on a cascade of giant dams in Yunnan Province just before the river enters the area where the borders of Burma, Thailand, and Laos converge. Through a cascade of twelve planned dams, China has sought the tap the river's hydropower reserves as it gushes from the high gorges on its route from the Tibetan Plateau to lower Yunnan. Transparency has become an important interstate issue, with the governments in Southeast Asia calling upon Beijing to shed its opacity and provide detailed technical information on its existing and upcoming dams.

Dam building on the Mekong, of course, extends beyond China. Emulating the example set by China, Laos and Cambodia have proposed building several dams either on the Mekong or its tributaries. In fact,

Laos, whose catchment region generates 35 percent of the Mekong's annual flows, has drawn an ambitious program to power its development through hydropower exports by becoming "the battery of Asia." Interestingly, the majority of the planned Laotian and Cambodian dams involve Chinese financial, design, or engineering assistance, with the projects designed to export electricity to China. Yet it is China's cascade of upstream mega-dams that promises to wreak the greatest ecological damage, besides affecting cross-border flows.

China's increasing exploitation of the resources of the Irtysh, Illy, and Amur rivers has turned water into a major bone of contention with downstream Kazakhstan and Russia. The Amur River (known as Heilong Jiang in Chinese) separates the Chinese and Russian parts of Manchuria. The Irtysh is the main tributary of the Ob River, which traverses the Omsk Region in southwestern Siberia. China has pursued a series of canals, dams, and hydropower stations on the Irtysh and Illy rivers as part of its western development program, spurring Russian and Kazakh concern. Kazakhstan has officially expressed deep concerns that the Chinese projects on the Illy River, for example, could turn Kazakhstan's Lake Balkhash into another Aral Sea, which has shrunk to less than half its original size.

As part of its new renewable-energy drive unveiled in the recent five-year plans for 2011-2015, China has clearly signaled that mega-dams on the Salween and Brahmaputra would be taken up as priority strategic projects, in addition to dams on the Arun River, which flows into Nepal before becoming a major tributary of the Ganges in India.

The concerns over the Chinese dam building on the Salween, known as Gyalmo Ngulchu in Tibetan, Thanlwin in Burmese, and Nu Jiang ("the Angry River") in Chinese, have centered on the threat to the Three Parallel Rivers area, which was added to the World Heritage List by UNESCO in 2003. But no sooner had that decision been made by UNESCO than China announced plans to build 13 mega-dams on the Salween in Yunnan, nine of them in its National Nature Reserves. That led to an international uproar, which prompted the Chinese government to shelve the dam-building plans. But since last year, in the name of boosting renewable energy and combating climate change, the same plans are being revived. The Three Parallel Rivers area, located on the southeastern rim of the Tibetan Plateau in Yunnan Province, is inhabited by 16 different ethnic groups and is rated as one of the world's most biologically diverse temperate regions.

China has dammed the Salween in Tibet — where it originates on the outer Himalayan rim — as exemplified by its 34-meter-high dam at Chalong in Nagchu Prefecture. It has also completed half of the 88 planned water projects, many of them small or medium-size hydropower plants, on the Salween and its tributaries in Yunnan Province's Nujiang Lisu Autonomous Prefecture. The current concern is focused on the cascade on giant dams it intends to build on the Salween in Yunnan near the Three Parallel Rivers area, where the Salween, the Mekong, and the Jinsha (a Yangtze tributary) run roughly parallel, north to south.

China already has built 11 dams on the Brahmaputra River, which flows from Tibet to Bangladesh via northeastern India. Most of these dams are modest in size, with some of them linked to the Three Rivers Development Project involving the Brahmaputra and its two key tributaries, the Kyichu (or the Lhasa River) and the Nyangchu. In March 2009, however, the chairman of the Tibet Autonomous Regional Government unveiled plans for major new hydropower stations on the Brahmaputra. A series of six major dams will now come up in the upper-middle reaches of the Brahmaputra, to the southeast of Lhasa, with construction of the first — the run-of-the-river Zangmu hydropower project — beginning in 2009 itself. India, through its technical-intelligence capability, however, has identified 24 Chinese projects in progress on the Brahmaputra, a majority of them small- to medium-size dams. The larger dams are coming up at Jiacha, Lengda, Zhongda, Langzhen, and Jiexu.

If China proceeds to build a dam twice larger than the Three Gorges Dam at Metog, it will have a devastating impact on Bangladesh, whose very future is threatened by environmental and climate change. The Chinese diversion would mean environmental devastation of large parts of Bangladesh, which is not a small state but the world's seventh most populous nation, with more than 167 million

citizens. Although tiny Monaco boasts the world's highest population density, the country with the greatest population density other than a microstate is Bangladesh.

The Brahmaputra is the most important river of Bangladesh. With its indigenous renewable water resources estimated at just 105 cubic kilometers ($km^3$) per year — of which the groundwater part is limited to 21.1 $km^3$ — Bangladesh heavily depends on the inflowing rivers from India that originate either there or in Tibet. That the waters of the Brahmaputra are the lifeblood for the largest number of Bangladeshis can be seen from the fact that more than half of Bangladesh's total quantity of transboundary waters is delivered by this river alone.

The People's Liberation Army remains an enthusiastic backer of the plan to divert the waters of the Brahmaputra. The plan comprises two projects: the construction at the river's "Great Bend" of a dam more than twice as large as the Three Gorges Dam, and the Brahmaputra's diversion northward as part of the so-called Great Western Route. PLA generals were the first to encourage federal authorities to examine the idea of rerouting the Brahmaputra's waters northward. The mega-plan proposal not only received the support of a number of PLA generals, but the technical assessments that had been carried out until then prompted the influential General Zhao Nanqi in October 2000 to declare: "Even if we do not begin this water diversion project, the next generation will. Sooner or later it will be done."

In 2006 Li Ling, the author of *Tibet's Waters Will Save China* (Xizang Zhi Shui Jiu Zhongguo: Da Xi Xian Zai Zao Zhongguo Zhan Lue Nei Mu Xiang Lu) and an ex-army officer himself, was quoted as saying that PLA generals support the diversion project. In fact, the publication of Li Ling's book *Tibet's Waters Will Save China* in November 2005 and its government-sponsored distribution among policy and engineering circles signaled an official interest in launching the Greater Western Route project. The book details the ambitious Brahmaputra-to-Tianjin diversion plan. Li's plan has sought to overcome the obstacles posed by the tall mountains and the world's longest, steepest canyon at the "Great Bend" by moving the main diversion point farther upstream.

Domestically, China new focus on water megaprojects in the traditional homelands of ethnic minorities has triggered fresh tensions along ethnic fault lines over displacement and submergence at a time when the Tibetan Plateau, Xinjiang, and Inner Mongolia have all been wracked by protests against Chinese rule. The projects, as mentioned earlier, threaten to replicate in international rivers the serious degradation haunting China's internal rivers. Having extensively contaminated its own major rivers through reckless industrialization and overexploitation of resources, China now threatens the ecological viability of river systems tied to other Asian nations in its bid to meet its thirst for water and energy.

Significantly, China is also the largest dam builder overseas. From Pakistan-held Kashmir to Burma's troubled Kachin and Shan states, China has widened its dam building to disputed or insurgency-torn areas, despite local backlash. Units of the People's Liberation Army are engaged in dam and other strategic projects in the restive, Shiite region of Gilgit-Baltistan in Pakistan-held Kashmir.

Thirty-seven Chinese financial and corporate entities are currently involved in more than 100 major dam projects in the developing world. Some of these entities are very large and have multiple subsidiaries. For instance, Sinohydro Corporation, the world's largest hydroelectric-equipment exporter, boasts 59 overseas branches.

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

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 United Nations Convention that lays down rules on the shared resources of international watercourses.

So, there are water treaties among 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, with a muscular confidence increasingly on open display, only compounds the regional security challenges.

China is willing to share hydrological data with riparian neighbors (that is, the statistics on river water flows) but not their waters. In fact, China deflects attention from its refusal to share water, or to enter into institutionalized cooperation to manage common rivers sustainably, by flaunting the accords that it has signed on sharing flow statistics with riparian neighbors. These are not agreements to cooperate on shared resources, but rather commercial accords to sell hydrological data that other upstream countries provide free to downriver states.

Yet, despite such a record, China continues to employ public diplomacy to try and assuage concerns in neighboring countries. Its public-relations machine keeps repeating the message that China has no intention of pursuing projects that would be "detrimental" to the interests of neighboring countries. Even as it builds new dams on international rivers, it speciously contends that they are not detrimental to downriver countries' interests.

Jiao Yong, the Chinese vice minister of water resources, said on September 12, 2011: "The Yarlung Tsangpo [Brahmaputra] river flows across China's Qinghai-Tibet Plateau. Many Chinese citizens have been calling for greater usage of this river. However, considering the technical difficulties, the actual need of diversion, and the possible impact on the environment and state-to-state relations, the Chinese government has no plans to conduct any diversification project in this river." Although the vice minister spoke of no "diversification" plan on Brahmaputra, some Indian newspapers misinterpreted his remark as no "diversion" plan. The minister, in his terse and inscrutable comment, began by emphasizing "the actual need of diversion." The point is that China usually begins quietly on any project and then presents the project as an unalterable reality.

Against this background, there is a significant risk of greater inter-riparian tensions and politicization of water in Asia. The time has come to exert concerted external pressure on China to rein in its dam frenzy and embrace international environmental standards and water-sharing arrangements.

In March 2010, the State Department rightly upgraded water as "a central U.S. foreign policy concern," noting that as rising populations face diminishing water resources, "the probability of conflict will increase." The State Department must now spotlight the threat to Tibetan waters from China's hydroengineering projects and its refusal to accept institutionalized cooperation with co-riparian states. Water, in fact, is a geopolitical weapon in China's hands that it can potentially use against lower-riparian countries, whose economies depend on the flow of river waters from the Tibetan Plateau.