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China's Water Challenge: Implications for the U.S. Rebalance to Asia

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Hearing on the Rebalance to Asia III: Protecting the Environment and Ensuring Food and Water Security in East Asia and the Pacific

How China manages its water resources over the next five to seven years has profound implications not only for the Chinese people but also for the Asia-Pacific region and beyond. Within China, water supplies—already scarce in many parts of the country—are diminishing and contributing to a range of serious economic, health, and social challenges. Spillover effects, such as damming and diverting transnational rivers, a push to acquire arable land abroad, and increasing conflict over regional fishery resources are also being felt well outside the country's borders. China's leaders have adopted a number of measures to try to address the country's growing water crisis, but these have fallen woefully short of the task at hand. In the context of the U.S. rebalance to Asia, China's water challenge, if not addressed, is a potentially destabilizing force within the region and suggests the need for targeted collaboration with Chinese actors as well as stronger cooperation with regional partners.

The Nature of the Challenge

China's per capita water resources are just over one-quarter that of the world average, and compounding the challenge, within China are highly unevenly distributed. Northern China possesses approximately 40 percent of the country's total population, half its agricultural land, and more than 50 percent of its GDP, yet receives only 12 percent of total precipitation. Southern China, in contrast, receives roughly 80 percent of the country's total precipitation, but severe water pollution dramatically reduces its natural advantage.[1]

[1] Elizabeth Economy, "China's Growing Water Crisis," in "Coming Up Empty: Tackling Resource Scarcity," *World Politics Review*, August 9, 2011.

Rapid economic growth has exacerbated China's water challenge. Water is consumed without consideration for future demand. Industry, which accounts for about one-quarter of China's total water consumption, uses anywhere from four to ten times more water per unit of GDP as other competitive economies. Water for energy is a particularly critical source of industrial water use—according to the Ministry of Water Resources, in 2010, China's coal mining, processing, and electrical-generating industries alone accounted for almost 20 percent of all water consumed nationally.[2] Agriculture demands the largest share of the country's water resources (about 60 percent), but household and industrial demand have increased dramatically over the past decade as individual wealth and the overall economy continue to expand. And as China urbanizes, the problem will only increase: urban residents use two and a half times more water than their rural counterparts.

At least ten provinces in China are below the World Bank's poverty level of 1,000 cubic meters per person per year; and according to Jiao Yong, vice minister of water resources, in 2012, China had more than 400 cities that lacked sufficient water, 110 of which were facing serious scarcity.[3] In Beijing, per capita water resources decreased to only 120 cubic meters per year in 2011[4]; by comparison, the global annual average per capita is 1,385 cubic meters.[5]

China's widespread pollution poses an additional challenge. Reports concerning levels of pollution vary widely, but none is positive. Overall, the Ministry of Environmental Protection reports that approximately one-fourth of the water that flows through China's seven major river systems and their tributaries is considered not even fit for agriculture or industry. A February 2013 report by the Geological Survey of China revealed that 90 percent of the country's groundwater was polluted.[6] A year earlier, Vice Minister of Environmental Protection Wu Xiaoqing claimed that 40 percent of rivers and 55 percent of groundwater was unfit for drinking.[7] Even water that is treated cannot be safely consumed from the tap. In late 2012, the Chinese newspaper, the *Southern Weekend*, featured an interview with a married couple, both of whom were water experts in Beijing. They stated that they had not drunk from the tap in twenty years, and have watched the water quality deteriorate significantly over just the past few years,[8] even while state officials claim that more than 80 percent of water leaving treatment facilities met government standards in 2011.[9] In rural China, a reported 320 million people do not have access to safe drinking water.[10]

According to one report by *Century Weekly*, there are a number of reasons for differing assessments of the country's water quality: 1) the frequency of testing at treatment plants is too low, and only 40 percent of the treatment plants in China's thirty-five major cities have the capacity to test for all 106 indicators in any case; 2) there are only a few independent water-quality monitoring bureaus, and most water testing is done in-house by the same water-treatment plant being evaluated; 3) there is weak transparency from local

[2] Keith Schneider, "Coal is China's Largest industrial water consumer," Grist.org, February 24, 2011, http://grist.org/article/2011-02-23-coal-is-chinas-largest-industrial-water-consumer/.
[3] *Ecns.com*, "China's water crisis a growing threat," March 26, 2012, www.ecns.cn/2012/03-26/11135.shtml.
[4] Ibid.
[5] Mark Fischetti, "How Much Water Do Nations Consume?" *Scientific American*, May 21, 2012, http://www.scientificamerican.com/article.cfm?id=graphic-science-how-much-water-nations-consume.
[6] Barry van Wyk, "The groundwater of 90% of Chinese cities is polluted," Danwei.com, February 18, 2013, http://www.danwei.com/the-groundwater-of-90-of-chinese-cities-is-polluted/.
[7] Wu Xiaoqing, "Address at the Press Conference of the State Council Information Office," June 5, 2012, http://www.china.com.cn/zhibo/zhuanti/ch-xinwen/2012-06/05/content_25566769.htm.
[8] Peng Liguo, "Beijing family boycotts city's tap water," ChinaDialogue.net, January 16, 2013, http://www.chinadialogue.net/article/show/single/en/5611-Beijing-family-boycotts-city-s-tap-water; for the original article in Chinese, please see: http://www.infzm.com/content/84703.
[9] "50 Percent Of Water In China May Be Unsafe To Drink," May 17, 2012, http://www.ibtimes.com/50-percent-water-china-may-be-unsafe-drink-698930.
[10] "Report on China's national economic, social development plan (2010)," NPC.gov.cn, March 16, 2010, http://www.npc.gov.cn/englishnpc/Special_11_4/2010-03/19/content_1621704.htm.

governments as to the results of the tests; and 4) no water testing accounts for the contamination that occurs from the aging and degraded pipes through which the water is transmitted to Chinese households.[11]

Economic, Health, and Social Impacts

Most important to Chinese officials and to the Chinese people is what their country's water challenge means for their health, economic well-being, and social stability.

Impacts on Public Health

Chinese scholars and activists as well as foreign analysts have started to document the linkages between the country's growing pollution and its rising public health challenges. According to Wang Zhangsheng, a professor at Tsinghua University's School of Environment, much of China's water contains organic compounds that can impair the immune system, affect fertility, cause cancer, or interfere with the nervous system. The impacts can take as long as ten or twenty years to emerge.[12] In 2010, Lee Liu, a geographer at the University of Central Missouri, reported in the magazine *Environment* that he had identified 459 cancer villages—villages in which cancer rates were significantly higher than normal. Most were clustered around rivers with the lowest grade of pollution on the government's five-point scale. Some of these villages had cancer rates thirty times greater than the national average.[13] In February 2013, the government-financed newspaper the *Global Times* took the unusual step of acknowledging the existence of these cancer villages and their link to pollution. Along with a map of cancer villages, the Weibo account of the *Global Times* stated that "…because of chemical poisoning 'cancer villages' and other serious [threats to] social health have begun to emerge in many areas."[14]

The negative impacts of water pollution are not limited to China's water supply. Chemicals and pollutants that seep into rivers and groundwater also find their way into food crops and eventually onto Chinese tables. A consistent diet of cadmium-laced rice has caused bone softening and weakness in some southern Chinese villagers. And according to the *China Economic Weekly*, in 2011, as much as twelve million tons of grain—enough to feed forty million people—were contaminated with heavy metals absorbed from the soil.[15] Although the Ministry of Environmental Protection and Ministry of Land Resources completed a five-year study of soil contamination in 2012, other than reporting that 10 percent of the land is contaminated with heavy metals, they have refused to release the results, calling the report a "state secret."[16]

Economic Costs

Measuring the economic costs of water pollution and scarcity is notoriously difficult. In 2007, the World Bank calculated the costs of China's water crisis to be 2.3 percent of GDP, of which 1.3 percent was credited to the scarcity of water and the other 1 percent to the direct impact of water pollution.[17] In Beijing, for example,

[11] Gong Jing and Wang Haotong, "What's coming out of China's taps?" ChinaDialogue.net, June 7, 2012, http://www.chinadialogue.net/article/show/single/en/4962-What-s-coming-out-of-China-s-taps-.
[12] Jing Gong and Hongqiao Liu, "Half of China's urban drinking water fails to meet standards," ChinaDialogue.net, June 6, 2013, http://www.chinadialogue.net/article/show/single/en/6074-Half-of-China-s-urban-drinking-water-fails-to-meet-standards.
[13] Lee Liu, "Made in China: Cancer Villages," *Environment*, March/April 2010, http://www.environmentmagazine.org/Archives/Back%20Issues/March-April%202010/made-in-china-full.html.
[14] David Wertime, "China's State-Run Media Shares Powerful Map of 'Cancer Villages' Creeping Inland," ChinaFile.com, February 22, 2013, http://www.chinafile.com/china-s-state-run-media-shares-powerful-map-cancer-villages-creeping-inland.
[15] Shi Jiangtao, "Millions of hectares of farmland and 12m tonnes of grain contaminated," *South China Morning Post*, July 19, 2012, http://www.scmp.com/article/738908/millions-hectares-farmland-and-12m-tonnes-grain-contaminated.
[16] Christina Larson, "Soil Pollution Is a State Secretin China," *Bloomberg BusinessWeek*, February 25, 2013, www.businessweek.com/articles/2013-02-25/soil-pollution-is-a-state-secret-in-china.
[17] Jian Xie, "Addressing China's Water Scarcity," *The World Bank*, 2009.

forty-nine factories closed in 2009 due to water shortage.[18] And in one of China's leading economic centers, Chongqing, which sits on the banks of the Yangtze River, local officials estimate that dealing only with the effects of water pollution on local agriculture and public health at 4.3 percent of GDP.

These costs are only likely to rise as scarcity increases. In March 2013, Beijing announced that more than half of Chinese rivers have "disappeared" since the 1990s due to climate change, industrial development, and large hydroelectric projects.[19] This changing water landscape will have significant impacts on future agricultural and industrial development.

Social Unrest

In 2010, the number of reported social protests in China reached 180,000[20]; and in 2013, the environment surpassed land expropriation as the leading cause of social unrest in the country.[21] The rule of law in China is only weakly developed, and without effective legal redress for environmental wrongdoing, victims of environmental pollution often resort to demonstrations to draw attention to their plight.

The advent of the Internet has further contributed to the ability of the Chinese people to bring bottom-up pressure on officials: Internet petitions, water pollution maps demarcating polluting factories, and pictures of polluted sites or protesting Chinese are all central to civil society efforts to reform the system of environmental protection. Urban residents have also become skilled at using the Internet or cell phone texts to organize protests, most commonly against government plans to site factories or garbage incinerators near their communities. In July 2012, for example, in Qidong, north of Shanghai, thousands of people demonstrated violently in opposition to a waste water pipeline from a paper mill because they believed it would pollute their coastal waters. In response to the local government's unwillingness to listen to their concerns, the local citizens stormed local government offices and caused $20,000 in damage. Their protest was inspired by another demonstration earlier that same month in Shifang, Sichuan province, roughly1000 miles away, that the Qidong residents had tracked via the Internet. In both cases, the local governments halted the projects in the face of the citizen unrest.

Regional and Global Implications

China's need for water to fuel its growth and feed its people also has far reaching implications for the rest of the world. To meet its food security needs, China is seeking land abroad; to address its declining fish catch, it is pushing further into contested waters; and to meet its need to supply its factories, land, and people with energy and water, it is expanding its network of dams and large scale hydropower plants.

Fishing in Distant Waters

In 2012, China's State Oceanic Administration completed its eight-year survey of marine resources and discovered that 90 percent of coastal cities suffer from intermittent water shortages; mangrove swamps have decreased by 73 percent and coral reefs by 80 percent since the 1950s, and coastal wetlands have shrunk by 57 percent.[22]

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[18] Brooke Barton, "Why water consciousness is a business imperative in China," GreenBiz.com, April 16, 2013, http://www.greenbiz.com/blog/2013/04/16/water-business-imperative-china.
[19] Emily Ford, "More than half of Chinese rivers have 'disappeared' since 1990s," *The Times*, March 29, 2013, http://dgrnewsservice.org/2013/03/29/more-than-half-of-chinese-rivers-have-disappeared-since-1990s/.
[20] Tom Orlik, "Unrest Grows as Economy Booms," *Wall Street Journal*, September 26, 2011, http://online.wsj.com/article/SB10001424053111903703604576587070600504108.html.
[21] "Chinese Anger Over Pollution Becomes Main Cause of SocialUnrest," *BloombergNews*, March 6, 2013, http://www.bloomberg.com/news/2013-03-06/pollution-passes-land-grievances-as-main-spark-of-china-protests.html.
[22] Jane Qiu, "Chinese survey reveals widespread coastal pollution," *Nature*, November 6, 2012, http://www.nature.com/news/chinese-survey-reveals-widespread-coastal-pollution-1.11743.

Pollution has taken a severe toll. Three-quarters of discharges into estuaries fail to meet regulatory standards. The area of coastal waters that earned the worst official pollution rating increased by more than one-third from 2011 to 2012 from 44,000 square kilometers to 68,000 square kilometers.[23] According to Chinese fishermen, a decade ago, it was possible to catch fish about ninety nautical miles from the coast but now they have to go 130 to 160 nautical miles, and the catch has dropped by three-quarters during the same time period. In addition, the number of types of marine products with commercial value has dropped from seventy to ten in recent years.

As fish stocks in Chinese coastal waters have become depleted, Chinese fishermen have become more deeply engaged in international waters. In 2011, 470 Chinese fishing boats were sent back by South Korean Coast guards for illegally entering South Korean waters. More than 90 percent of Chinese companies engaged in distant-water fisheries are private and small,[24] yet according to some analysts, they are increasingly coordinated with Chinese maritime authorities. As Lucio Blano Pitlo suggests, "In April 2012, Chinese fishermen in the Bajo de Masincloc (Scarborough Shoal) were about to be apprehended for illegal fishing but were able to radio Chinese maritime surveillance ships to intercede on their behalf. Fishermen have become securitized."[25] While conflict is most regularly reported with China's neighbors, such as Vietnam, the Philippines, and Japan, according to some sources, the "most extreme" illegal, unreported, and unregulated fishing by Chinese has taken place in West African waters. A 2013 report by scientists at the University of British Columbia estimates that the total catch of some 3400 Chinese fishing vessels is 4.1 million tons (worth more than $11 billion), but that only 9 percent of China's total catch in Africa, as well as in other international waters, was reported to the United Nations, complicating efforts by African nations to manage their stocks.[26] (These numbers are disputed by the United Nations Food and Agricultural Organization as too high.) Some of these catches may be legal, resulting from agreements between China and host countries that have not been made public, but the sheer magnitude and unreported nature of the catch is enough to raise alarm bells throughout Africa and the developing world.

Securing Food

China has historically placed enormous importance on food security and food self-sufficiency. Increasingly, however, scarce water supplies and lack of arable land have driven China outside its borders to ensure this food security. According to one study published in 2013, China is responsible for about 7 percent of all cross-border land purchases (i.e. purchases by entities from one country of land in others), third in the world, well behind the United Kingdom and just behind the United States.[27] However, the rate of its acquisitions is increasing rapidly.

Chinese land and agricultural investments in different parts of the world take varying forms and serve different purposes. In African countries such as Zambia and Senegal, Chinese-invested farms are typically smaller-scale—generally under 5,000 hectares—and often serve local Chinese communities, such as those that emerge around particular resource or infrastructure investments.

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[23] Qian Wang, High Tech Marine Sector Steams Ahead, *China Daily*, June 8, 2013, http://english.peopledaily.com.cn/202936/8277851.html

[24] "Group formed to aid fisheries," *Xinhua*, May 30, 2013, www.china.org.cn/environment/2012-05/30/content_25515197.htm.

[25] Lucio Blanco Pitlo III, "Fishing Wars: Competition for South China Sea's Fishery Resources," *Eurasia Review*, July 10, 2013, http://www.eurasiareview.com/10072013-fishing-wars-competition-for-south-china-seas-fishery-resources-analysis/.

[26] John Vidal, "Chinese fishing fleet in African waters reports 9% of catch to UN," the Guardian (April 3, 2013) http://www.guardian.co.uk/environment/2013/apr/03/chinese-fishing-fleet-african-catch

[27] Maria Cristina Rulli, Antonio Saviori, and Paolo D'Odorico, "Global land and water grabbing," *PNAS* 10, no. 3 (January 2013): 895.

In other countries, such as Brazil and Australia, China has sought larger stakes, generally to meet needs in China. Chinese companies' preference is to own land outright to ensure "product safety, lower production costs, and better profits."[28] Where owning land outright is not possible as in Brazil, they are investing in infrastructure and processing facilities that allow them to purchase soybeans directly from Brazilian farmers, circumventing multinational grain companies.[29] In a number of countries, such as the Philippines, Brazil, Argentina, and Australia, there has been pushback—particularly from local populations—where communities have either passed laws or rejected land purchases by Chinese companies. Concerns vary by country, but range from fears over the export of Chinese farmers to control of valuable arable land by Chinese state-owned enterprises.

Damming and Diverting

China has more dams than any other country in the world, and between 2007 and 2020, it plans to triple its hydropower capacity. According to Ma Jun, director of the Chinese NGO Institute of Public and Environmental Affairs, many Chinese rivers simply will not be running in ten years if China meets such hydropower goals.[30]

China's hydropower plans and water needs also have significant implications for the country's neighbors. Several of Asia's longest and most important rivers begin in the Himalayas and the Tibetan Plateau, and China is a central player in many of the controversies surrounding shared water resources in Central, South, and Southeast Asia. Several of these conflicts, such as those centered on the water resources of the Irtyush, Mekong, and Brahmaputra Rivers are raising regional tensions as China develops plans upstream that may have dramatic impacts on the lower reaches. Damming of rivers to generate hydroelectric power alters the way that water flows; it can harm fisheries and agricultural activity downstream. When river waters are permanently diverted for irrigation, other energy production, or similar uses that permanently consume the water (unlike hydroelectric dams), they can harm those who share the water resources more. This potential for damage is often compounded by poor or non-existent information sharing between China and others with which it shares rivers.[31]

Across all three conflict areas—the Mekong, the Irtysh, and the Brahmaputra—China has been generally unwilling to discuss shared water rights—which it does not recognize—or even to share information concerning water levels, usage, or pollution. In each case, however, significant negative media attention and public pressure have brought China to the table. With regard to the Irtysh, for example, China's plans to divert significant amounts of water from the Irtysh through a series of canals contributed to significant negative publicity within Kazakhstan and eventually to the establishment of a 2011 Agreement on Water Quality in Transboundary Waters between China and Kazakhstan, obligating each side to monitor water quality.[32] The two countries are also conducting scientific research on transborder river issues. The research is expected to be completed in 2014 with an eye toward informing later agreement. Still there is no agreement as to shared water rights, although Kazakhstan may be able to leverage Chinese interests in investing in and developing Kazakh oil and copper resources to make progress in this area.

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[28] Stephen Chen, "Party cadre Zhu Zhangjin pins hopes of food security on overseas farms," *South China Morning Post*, March 24, 2013, http://www.scmp.com/news/china/article/1198218/party-cadre-zhu-zhangjin-pins-hopes-food-security-overseas-farms.
[29] Elizabeth Economy, Interview with Brazilian Agricultural officials (March 2013).
[30] David Stanway, "Water, CO2 the priorities for China's 5-year plan," *Reuters*, March 3, 2011, http://www.reuters.com/article/2011/03/03/us-china-environment-idUSTRE72214Y20110303.
[31] Elizabeth Economy and Michael Levi, *By All Means Necessary: How China's Resource Quest is Changing the World* (forthcoming Oxford Press, 2014)
[32] "Conflict of Interest has Created Water Crisis," European Dialogue, April 13, 2011, http://eurodialogue.org/conflict-of-interests-has-created-water-crisis.

Beijing's Response

The Ministry of Environmental Protection's annual report released in June 2013 stated that the future outlook on the quality of China's water sources is "far from optimistic."[33] China's leaders face a daunting challenge: how to meet the needs of their rapidly growing economy and large population with a gravely threatened water supply. Beijing's answer more often than not has been to launch large work projects and campaigns reminiscent of the Cultural Revolution era. They also have plans to invest $650 billion on projects between 2011 and 2020, but between 2006 and 2010, they spent $112 billion and the situation still has not improved.[34]

The answer to China's water dilemma is not complicated in conception, but it is challenging in implementation. It rests in developing a system of incentives and disincentives that make it easy for officials and the Chinese people to do the right thing. Local environmental protection bureaus often lack the capacity to enforce laws and regulations, with too few human or financial resources to oversee the factories in their jurisidiction. Fines for polluting enterprises are often ignored or negotiatied such that continuously paying fines is still cheaper than following regulations. And corruption is also a significant problem. Of the 1.3 percent of GDP that Beijing currently spends on environmental protection (note: experts believe the percentage should be closer to 2-4 percent of GDP), half finds its way into other local priorities such as infrastructure development.[35]

Pricing reform is one element of an effective policy response. Simply put, water in China is too cheap. Experiments are under way in a number of municipalities for tiered pricing to try to distribute the burden of price rises, and Beijing has asked local governments to "carry out a tiered pricing system for urban households by the end of 2013."[36] However, such efforts are highly sensitive politically. A recent proposal by the China Water Investment Corporation, which is owned by the Ministry of Water Resources and the China Power Construction Corporation, to increase water tariffs by more than ten times was the object of a scathing editorial in the investigative journal *Caixin*, which argued, "More than half of the country's water companies are in the red. Low prices are not the major reason companies have suffered large scale losses—it is due to lack of government investment. They need to maintain pipes and other facilities. Public access to clean drinking water should be provided by the government. Not one Chinese city has said its tap water is suitable for drinking."[37]

A sound Chinese water strategy also needs to strengthen those elements of China's political system that support good environmental policymaking. Yet such change is even slower to emerge than pricing reform. The most dynamic and creative forces in Chinese environmental protection are Chinese environmental NGOs and the media. They collaborate—often with international partners—on a wide range of issues such as publishing maps of polluting factories, pushing local officials to publish legally-mandated pollution statistics, protesting excessive dam construction, developing building energy efficiency standards, and documenting the public health consequences of pollution. Yet Chinese officials remain concerned about delivering too much information and too much power to forces outside direct government control. Thus, the media are advised not to publicize water pollution disasters, and environmental activists may be detained and arrested if they overtly challenge local officials.

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[33] "China moves to address drinking water woes," *Xinhua*, July 21, 2013, http://news.xinhuanet.com/english/china/2013-07/21/c_132559802.htm.
[34] David Stanway, "After China's multibillion-dollar cleanup, water still unfit to drink," *Reuters*, February 20, 2013, www.reuters.com/article/2013/02/20/us-china-pollution-water-idUSBRE91J19N201.
[35] Stephen Chen, "Money for fighting pollution 'wasted,'" *South China Morning Post*, April 1, 2012 http://www.scmp.com/article/698060/money-fighting-pollution-wasted
[36] Zhao Li, "Low water prices must be revised," *China Daily*, May 27, 2011, http://usa.chinadaily.com.cn/business/2011-05/27/content_12592357.htm.
[37] Gong Jing, "Closer Look: Why Idea to Raise Water Bills Is All Wet," *Caixin*, April 18, 2013, http://english.caixin.com/2013-04-18/100515675.html.

The rule of law is also essential to effective environmental protection. Former deputy director of the State Environmental Protection Administration (now the Ministry of Enviornmental Protection) Zhang Kunmin, for example, has stated that the environment cannot truly be protected until people's legal rights are guaranteed. [38] However, laws and regulations that promote transparency are often poorly enforced. For example, Chinese scholars have noted that although environmental impact assessments are perhaps the most important form of government-supported citizen engagement in the environment, the system is deeply flawed: only a small percentage of projects are subjected to compulsory public participation; the timing and duration of engaging the public is short; the method of selecting those who can participate is often biased; and the amount of information actually disclosed is often quite limited in order to try to prevent social unrest.

Moreover, recent draft revisions to the Environmental Protection Law take a step backward in accountability and the rule of law by placing sole authority for bringing public interest environmental lawsuits in the hands of the All-China Environmental Federation (ACEF) and its provincial-level branches. Previously, some cities, such as Hainan, had permitted a wide range of people, including individuals to bring cases; and non-governmental organizations, such as the Center for Legal Assistance to Pollution Victims, have handled over 200 environmental lawsuits for pollution victims. Since the ACEF is overseen by the Ministry of Environmental Protection, many environmental activists believe that it is unlikely to be very aggressive in bringing cases, and are protesting the draft regulations.[39]

China's Environment and the U.S. Rebalance to Asia

The U.S. rebalance to Asia reflects a renewed and broader commitment by the United States to the Asia Pacific region, first and foremost in the realms of security and trade and investment. Expanding the parameters of the rebalance to include issues such as the environment, which is integrally intertwined with both regional security and future regional economic growth, adds an important new dimension to this U.S. effort.

The role of China in the original conception of the rebalance is somewhat complicated, recognizing both the enormous opportunities for growing U.S.-China cooperation but also the challenges posed by China's inreasing economic and military strength. Much as in the security and economic arenas, the U.S. focus in the environmental arena should be two-fold: supporting targeted bilateral U.S.-China cooperation; and strengthening multilateral cooperation to enhance the efficacy of collaboration with China when possible and to bring pressure to bear on China when necessary.

Target the Fundamentals:

The United States has a vast array of environmental cooperation efforts underway with China. It should develop a clear set of priorities that focus most explicitly on those areas where China needs the greatest support. For example, given the structural weakness in China's environmental protection system, the United States could develop a signature program on the rule of law, utilizing public-private partnerships with U.S. business, scholars, and NGOs. Building on the work of the American Bar Association and others, the program could help train judges and lawyers, as well as help develop regulations and standards where appropriate. For example, China is making significant investments in shale gas development both within China and, increasingly, in the United States. It plans to have the capacity to develop 100 billion cubic meters of natural gas annually by 2020. Yet China's Ministry of Environmental Protection has said that it will need at least three to five years to develop the necessary regulations. Given the strong interest of Chinese oil and gas

[38] Meng Si, "Seeking damages," ChinaDialogue.net, July 21, 2011, http://www.chinadialogue.net/article/show/single/en/4422-Seeking-damages.
[39] Luna lin and Zhang Chun, "Amending environmental protection law a backward step, say NGOs," ChinaDialogue.net, June 28, 2013, www.chinadialouge.net/blog/6162-amending-environmental-protection-law-a-back.

companies in U.S. shale gas development, U.S.-China cooperation on developing environmental standards would be beneficial to both sides.

Strengthen and Better Utilize the U.S. Embassy in Beijing:

The United States Embassy in Beijing achieved singular success in supporting environmental protection in China by Tweeting Chinese air pollution statistics and spurring the citizen activism that resulted in Chinese cities more accurately reporting local air quality. The Embassy should consider launching a broader environmental educational campaign via the Internet that would strengthen citizen awareness. The campaign could share best U.S. practices, provide a platform for the Ministry of Environmental Protection and Chinese environmental activists to share their work, and potentially even address sensitive issues such as food safety.

Encourage China's Participation in the Trans-Pacific Partnership:

The Transpacific Partnership (TPP) represents a unique opportunity to reinforce the linkage between trade and environment in a meaningful manner. Evading environmental laws and subverting norms undermines best trade practices. The United States should ensure that a strong environmental commitment on issues such as the illegal timber trade, trade in endangered species, and illegal fisheries that allows for binding commitments and international enforcement is incorporated into the TPP. China's accession into the TPP would then represent an important new vehicle for helping ensure China's adherence to environmental laws and regulations.

Work with Other Partners in the Region to Support Transparency and Best Practices:

Bilateral U.S.-China cooperation can only accomplish so much. The European Union, Japan, and Canada have all been very active in developing Chinese environmental protection efforts. More attention needs to be paid to ensuring that cooperative efforts reinforce but do not replicate each other. To the extent possible, intellectual and financial resources should be combined to deliver the strongest support. At the same time, the work that the United States has undertaken throughout the Asia-Pacific region, such as the Coral Triangle Initative and the Mekong River Commission, are essential to strengthening the capacity of our partners to address their own internal monitoring and enforcement capacities, as well as that of China. The United States should look for additional means of enhancing its commitment to such regional agreements, as some analysts have proposed for example, by developing a system of fish import certification to reduce the proliferation of illegal fishing throughout the region.