

China's Filthiest Export

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The economic boom Deng Xiaoping sparked in 1980 brought millions out of poverty and turned China into the world's factory. However, by following in the footsteps of many western countries that opted to “pollute first and clean up later,” China built its economic success on a foundation of ecological destruction. This environmental destruction is threatening the economy, human health, and social stability, as well as potentially causing irreparable damage to the water, soil, and forest ecosystems.

The main drivers of China's environmental problems are its dependence on coal for energy and a weak environmental governance system. The State Environmental Protection Administration (SEPA) is poorly funded and understaffed, local governments protect polluting industries, and public and civil society groups have limited (albeit improving) power to watchdog the government and business sectors.

China's weak enforcement of environmental laws is also leading to natural resource destruction well beyond its borders through far-reaching air pollution, degradation of transboundary waters, and depletion of forestry resources. U.S. demand for cheap Chinese imports has also hastened the environmental despoliation, not only in China but in the United States as well. An unhealthy proportion of California's fine particulate pollution, for instance, comes from China.

At the level of both government and civil society, the United States and China are acting to repair the damage. With China about to pass the United States as the leading greenhouse gas producer, however, much more needs to be done.

Can't See Clearly Now

Largely because of air pollution connected to its cars and coal, 16 of the world's 20 most polluted cities in the world are in China. Coal, most of it dirty, fuels 70% of China's energy and is the main source of the country's domestic and transboundary air pollution. Despite major efforts to promote energy efficiency and renewables, China will remain dependent upon coal for the foreseeable future.

China already consumes more energy and emits more greenhouse gases (GHG) than any country except the United States. It is expected to surpass the United States in GHG emissions by 2009. The expansion of China's power plants alone—562 new coal-fired power stations by 2012— could nullify the cuts required under the Kyoto Protocol from industrialized countries. The lack of widespread coal-washing infrastructure and scrubbers at Chinese industrial facilities and power plants exacerbates the problem.

Carbon dioxide (CO₂) emissions from cars in China are also growing rapidly, replacing coal as the major source of air pollution in major Chinese cities.

Regionally, sulfur dioxide (SO₂) and mercury emissions from coal burning are some of the main pollutants spreading from China. Acid rain resulting from coal and fossil fuel combustion has damaged nearly one-third of China's limited cropland. China's export of acid rain is also severely damaging forests and watersheds on the Korean Peninsula and in Japan, where each spring Siberian winds and dust storms spread mercury and other airborne contaminants (such as dioxin and furan from China's ubiquitous cement kilns).

Information on Chinese emissions is sketchy since the government has not publicly disclosed CO₂ or mercury emissions data since 2001. The most commonly cited numbers attribute 25-40% of global mercury emissions (from coal burning) to China. Within China's borders, air pollution from coal, cars, and dust storms is responsible for 3-400,000 premature deaths and 75 million asthma attacks annually. Data on health impacts internationally are difficult to estimate, but China's SO₂ is responsible for nearly half the acid rain in Korea and Japan, and particulates and dust from China are worsening air quality as far as the U.S. west coast.

Some U.S. researchers believe at least one-third of California's fine particulate pollution—known as aerosol—originates from Asia. These pollutants could potentially nullify California's progress in meeting stricter Clean Air Act requirements. In May 2006, University of California-Davis researchers claimed that almost all the particulate matter over Lake Tahoe was from China.

Researchers have also found that mercury becomes more hazardous the further it travels. At the smokestack in Asia it is insoluble, but by the time it reaches the U.S. west coast, mercury transforms into a reactive gaseous material that dissolves easily in the wet climates of the Pacific Northwest. For example, researchers have discovered that at least one-fifth of the mercury entering the Willamette River in Oregon comes from abroad, most likely from China. This mercury is even beginning to build up to toxic levels in the local wildlife.

Other studies are pointing to the growing global problem of black carbon (BC) soot from China. As the active ingredient in the haze produced by burning crop residues, household stoves, and vehicles, BC is potentially the second most important global warming gas after CO₂. Responsible for 17% of these emissions, China is the largest BC-emitting country in the world (with Russia and India not far behind). The BC particles are less than one micron in diameter and cause hundreds of thousands of premature deaths from respiratory illnesses each year in China. Moreover, BC blocks sunlight and may be lowering crop yields by 30% for both wheat and rice in China. Regionally, BC emissions may be heating the atmosphere and destabilizing weather throughout the Pacific Rim.

Desertification in northern China is advancing at an annual rate of 1,300 square miles, creating dust storms, destroying farmland, and driving more rural migrants into cities. The expanding deserts are also increasing the severity of the spring sandstorms: 100 are

expected between 2000 and 2009, a marked increase over the previous decade's 23. This dust, which can carry other pollutants, has already begun to reach the western coast of the United States.

Can't Drink the Water

While growing transboundary air issues are the most obvious sign of China's poor enforcement of pollution control, China's largest domestic environmental challenge is the destruction of water resources. Water pollution has turned many of China's rivers black. Half the rivers are so polluted that their water cannot be used by industry or agriculture. This pollution threatens economic growth, human health, and watershed ecosystems, as well as creating regional environmental problems.

With its 19 international lake and river systems, China's management of transboundary waters has only become a sensitive issue in a handful of these basins—most notably the Mekong and Amur. However, the potential for conflict increases in other basins as the Chinese government pushes economic growth into western China. China's damming, pollution, and channelization of the upper reaches of the Mekong River is perhaps the most sensitive transboundary water situation. Of particular concern to downstream countries is the current boom of dam building for hydropower. There are 200-plus dams in planning or under construction in southwest China, most of which are pushed by local governments and companies that rarely (or inadequately) complete the required environmental impact assessments.

As an observer rather than a full member of the Mekong River Commission (MRC), China is not obligated to clear its hydropower plans with downstream countries. The first dam (Manwan) was completed on the Lancang in 1996 and caused unusually low water levels in northern Thailand. In December 2001, China completed the Dachaoshan dam on the Lancang, which may have disastrous effects on fisheries and farms in Vietnam, Thailand, Laos, Cambodia, and Myanmar. The Xiaowan, the third in the cascade of eight dams, began construction in 2001. The International Rivers Network reports that this dam will markedly lengthen dry season flows and block 35% of the silt that nourishes the floodplains downstream.

The regional impact of China's water pollution was illustrated quite poignantly on November 13, 2005 when an explosion at a PetroChina chemical plant in Jilin province released over a hundred tons of benzene into the Songhua River. The Songhua flows into the Heilong River in Heilongjiang Province where it supplies drinking water for the provincial capital of Harbin. Another 600 kilometers downstream it is the main water supply for the Russian city of Khabarovsk. For several days, provincial and local officials in Jilin hesitated to inform downstream governments or SEPA about the spill.

Once informed, Harbin officials initially tried to cover up the crisis by telling its city residents ten days after the spill that the water supply would be cut off for “routine maintenance.” However, in the face of growing rumors of a major chemical spill,

municipal officials quickly revised their announcement stating that the water system would be shut down for four days to prevent citizen exposure to benzene.

In the wake of this spill, the SEPA Minister resigned and China prosecuted a number of local officials. In Russia, governors and mayors downstream of the spill became more vocal about their anger with what has been long-standing Chinese water pollution contaminating the Amur and endangering public health. Russians also are frustrated with agricultural withdrawals and diversion schemes for dam projects on the tributaries that feed the Amur/Heilong River. These projects have altered the volume and timing of flow, disrupting agriculture and fisheries throughout Russia and Mongolia.

Besides water pollution flowing into rivers in neighboring countries, another growing concern has been the increase in marine water pollution from China. Because of the low rate of wastewater treatment and growing industrial emissions in Chinese rivers, estuaries and coastal areas near estuaries are plagued with heavy pollution problems, particularly Bohai Bay and the mouth of the Yangtze. Exacerbating China's coastal and marine pollution is the fact that many coastal cities pump at least half of their wastewater directly into the ocean, thereby seriously increasing the scope of red tides and coastal fish die-offs. This coastal pollution is also beginning to worry its closest neighbors, Korea and Japan.

However, a more urgent marine environmental issue is China's growing consumption of fishery products, which is strongly linked to the country's growing freshwater pollution. Since 2002, China has become the biggest exporter of fishery produce in the world. To meet growing domestic and international demand for fish and since few of China's rivers and coastal waters are clean enough to support robust aquaculture production, Chinese fishers and fishery companies have expanded their operations in the coastal zones of other countries or in the high seas.

The Chinese government has encouraged deep-sea fishing through preferential policies. Currently, over 1,800 ocean-going fishing vessels under Chinese registry are fishing the waters near 40 countries in three oceans. Competition for the shared fish stocks of the China seas has intensified considerably over the past 20 years as fish catch rates have declined due to pollution and over-fishing. Many species in the China seas have declined so precipitously they now face total extinction. Despite a network of bilateral fishery management agreements, Chinese fishers have sparked many clashes at sea and at the negotiating table with other countries, especially Vietnam. While none of these countries would ever go to war over such incidents, they do represent yet another irritant in their bilateral relations with China.

Can't See the Forest (Because There are No Trees)

From deforestation in Russia and Indonesia to coal mining in Mongolia and oil extraction in Africa, China's growing hunger for raw materials and energy has damaged the ecosystems of other countries. Ironically, the massive increase in forestry product imports stems from an ambitious and fairly effective campaign to protect forests within China. The massive flood of the Yangtze River in 1998, which policymakers and researchers

attributed to deforestation, led the Chinese government to institute a timber-cutting ban and a major campaign to convert slope lands from agriculture to forestry.

The timber ban, combined with China's already very limited per-capita forest resources, has fueled the rapid rise in China's imports of forest products. This wood has also found its way into products exported to the United States and Europe. A study by the NGO Forest Trends notes that over the past eight years China has captured almost a third of the global trade in furniture, ranking it second among all countries in terms of the total value of its forest products.

Chinese timber importers acquire 75% of this wood for furniture and plywood export from the Asia Pacific, mainly from Russia, Burma, and Indonesia. Approximately half of these imports are illegal. Such illegal trade is difficult to regulate, especially between Russia and China where the forestry bureaus in both countries are highly decentralized and under-funded. Loss of these remaining major forests creates serious domestic problems of soil erosion and flooding, while globally the concerns are the loss of biodiversity and increasing climate change.

Addressing China's Pollution Exports

Although caused by weak environmental governance at home, China's regional and global pollution is fueled in great part by the burgeoning demand internationally for cheap Chinese goods. For example, 7% of China's CO₂ emissions are estimated to result from the production of U.S. imports.

Since 1985, the Chinese government has welcomed considerable international assistance to help the country address its severe environmental and energy problems. The international community—multilateral organizations, bilateral aid, and nongovernmental organizations—has been very active in China working on a broad range of environmental issues. China's impact on climate change has fueled many international projects related to clean coal, urban transport, and renewables. In terms of forest resources, the Forestry Stewardship Council and other NGOs such as Forest Trends and World Wildlife Fund have worked to promote a global forest certification program, which could be an important means for creating a consumer-driven demand for better timber management.

Transboundary water issues will be challenging to address, since China as the upstream country has little incentive to cooperate with downstream basin protection initiatives. For example, China's lack of formal participation in the Mekong River Basin Commission is a major obstacle in protecting the Mekong. However, some researchers have pointed out that China is being pulled into engagement around the basin through other regional economic development mechanisms, such as the Greater Mekong Subregion framework that the Asian Development Bank (ADB) launched to promote socioeconomic development in the Mekong's six riparian countries. Another initiative is the Quadripartite Economic Cooperation initiative launched in 1993 by China and Thailand to promote economic cooperation among the upstream riparian countries.

U.S.-China Collaboration

Long-term congressional restrictions on aid and assistance to China, combined with a lack of leadership from the administration on promoting clean energy and environmental cooperation with China, have hampered sustained and truly effective U.S. government programs. These U.S. environmental and energy projects in China are often uncoordinated, inconsistent, and not nearly as effective as similar work conducted in other countries.

In stark contrast to the U.S. government presence, nearly 60 U.S.-based NGOs, professional societies, and universities have been active in helping Chinese government agencies and NGOs work on a broad range of energy and conservation issues. The San Francisco-based Energy Foundation, for example, helps Chinese and U.S. NGOs and research centers to promote energy efficiency in China with grants that are significantly greater than the total Department of Energy budget in China.

The growing regional impacts of China's pollution and energy hunger could create more incentives for the Bush administration and Congress to pursue collaboration with China. Or, as the controversy over China's bid to purchase the Unocal oil company in 2006 illustrated, China's energy hunger and pollution could be used as another reason to vilify the country. There is an unprecedented opportunity to develop a coherent approach to energy and environmental relations with China.

On the American side, the war against terrorism will continue to require the U.S. government to engage China so that it does not undercut U.S. efforts in central Asia, the Middle East, or the Korean Peninsula. Moreover, cooperating with China on energy and environmental issues would help strengthen U.S.-China ties, which are continually strained by friction over Taiwan, trade imbalances, and a wide range of other issues. Thus a concerted effort by the world's two largest energy consumers to work together to solve their mutual energy problems and to develop a partnership to help China with its pollution problems could build some degree of confidence that would help the relationship weather tough times.

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