

IV. The “Hot Spots”

China A Dragon Fuelled by Coal

When it comes to coal, China is the dragon in the room. In 2012, China mined 3,660 million tons of coal, equal to 46% of the world’s total coal production.³⁹ While China’s net coal imports of 289 million tons seem small in comparison, they nonetheless make the People’s Republic the largest coal importer worldwide. 81% of China’s electricity is generated by burning coal, and the power sector accounts for half of the country’s coal consumption. Other significant consumers are the steel, chemical and cement industries, in part reflecting China’s status as a kind of “factory floor” for the world. Due to the massive increase of its coal consumption (300% since 2000), China surpassed the U.S. in 2007 and is now the world’s largest carbon emitter.

Dirty Air

In October 2013, the city of Harbin in northeastern China essentially closed down as it was enveloped by choking smog, leading to closure of schools and a suspension of public buses.⁴⁰ Many citizens wore face masks to avoid inhaling what is known as PM 2.5 – tiny airborne particles measuring 2.5 microns or less in diameter that penetrate deeply into the lungs and are a leading cause of cancer and heart disease.⁴¹ PM 2.5 is a major component of the fly ash and dust expelled from coal-fired power plants. In what was termed an “airpocalypse,” fine particle readings in Harbin reached 1,000 micrograms per cubic meter, 40 times higher than the level set by the World Health Organization (WHO). This kind of pollution has become commonplace in China’s large industry centers. Under pressure from the public, Beijing in 2012 became the first Chinese city to publicly announce levels of fine particle pollution. Since then, 113 cities have followed suit.

Protests against rampant air pollution have begun to prompt government action. In his first public speech after taking office, the country’s new Premier, Li Keqiang, said China’s smog gave him a “heavy heart,” and in September 2013, China’s cabinet announced a national action plan, including a ban on the construction of new coal-fired power plants in the regions surrounding Beijing, Shanghai and Guangzhou. Ambitious targets were also set for cutting coal consumption in the provinces of Shandong, Hebei and Beijing, which consume one third of all coal in China. The provinces have seen coal consumption grow at 6% a year, so the absolute reduction targets require a rapid and dramatic reversal of the coal consumption trend. More coastal provinces are expected to make announcements.⁴²

39 “Is China Slowly Giving Up on Coal?,” *Forbes*, October 2, 2013

40 “China Smog Emergency Shuts Down City of Harbin,” *International Business Times*, October 21, 2013

41 <http://www.pnas.org/content/110/22/8756.full>

42 “China clean air plan to slow coal consumption,” *Greenpeace East Asia*, September 2013

Moving West

In other parts of the country, the coal industry is, however, still expanding. Although China’s current Five-Year Plan (2011 – 2015) states that the country’s coal consumption should not exceed 3.9 billion tons, it also foresees the construction of 14 enormous coal mining bases in Inner Mongolia, Shanxi, Shaanxi, Ningxia, Yunnan and Xinjiang. The coal coming out of these 14 bases will then fuel coal-fired power stations with a total expected capacity exceeding 600,000 megawatts. What’s more, it is not only coal extraction and coal-fired power generation that is projected to soar, but also the development of coal chemical industries. Coal liquefaction, however, puts a heavy toll on the environment. For every ton of oil produced, 3-4 tons of coal and 10 tons of water are required. And as a by-product, 9 tons of CO₂ and 4.8 tons of waste water are emitted.⁴³

Coal versus Water

A report published by the Chinese Ministry for Water Resources in March 2013 shows that since 1990 the country has lost roughly half of its rivers and streams. And according to China’s National Bureau of Statistics, the country’s total water resources have dropped by 13% since the start of this century. At the same time, coal production has tripled and the water needed for mining, processing, and consuming this coal now accounts for more than a sixth of the nation’s water withdrawals. As the British bank HSBC writes in a report on the water-related challenges of China’s coal industry: “This level of water use is not sustainable: water tables are declining, and in some areas, coal mining is already being constrained.”⁴⁴

Around 95% of China’s coal mines are underground and require drainage of the water table. Water is also needed to cool mining equipment, reduce dust levels and to wash tunnels. A recent study estimated that 2.3 cubic meters of water are withdrawn for every ton of coal mined, both in direct mining operations and for pit drainage.⁴⁵ Most of the nation’s new coal mines are, however, located in water-scarce regions.

Shanxi, which accounts for about 28% of China’s coal production has per capita water resources of only 347 cubic meters, less than a middle Eastern country like Oman. Inner Mongolia and Shaanxi, which together contribute 40% of coal output, have less than 1,700 cubic meters per person, the level the United Nations deems as water-stressed.⁴⁶

It is predicted that by the end of the current Five-Year-Plan, the annual water consumption of the coal bases in Inner Mongolia, Shaanxi, Shanxi and Ningxia will either challenge or exceed the entire area’s current total industrial water supply capacity (94.1% to 140.8%). This means these coal bases, if fully developed, will consume a significant amount of water currently allocated to different uses such as farming, urban residential use or environment conservation. In turn, the fierce competition for water resources between industrial and non-industrial sectors will very likely cause conflict and unrest in the affected regions.⁴⁷

Coal now accounts for more than 1/6 of the nation’s water withdrawals.

43 “Coal-to-Chemicals: Shenhua’s Water Grab,” Calvin Quek, Greenpeace, August 7, 2013

44 “Chinese Coal and Power: The water-related challenges of China’s coal and power industries,” HSBC, June 2013

45 “A supply chain based assessment of water issues in the coal industry in China,” Pan et al., Energy Policy 48, 2012

46 “China Coal-Fired Economy Dying of Thirst as Mines Lack Water,” Bloomberg, July 24, 2013

47 “Thirsty Coal: A Water Crisis Exacerbated by China’s New Mega Coal Power Bases,” Greenpeace East Asia, 2012

Shenhua's Water Grab

A case in point is Shenhua's coal to liquid project in the Ordos Basin in Inner Mongolia, a region that harbors 26% of China's coal reserves, but only has 1.6% of the country's water resources. In August 2004, Shenhua began construction of its coal-to-liquid project on the banks of the Ulan Moron River. Due to decades of coal mining operations, the river was already seriously depleted and several of its tributaries had completely dried up. To secure the water needed for its liquefaction project, Shenhua therefore began extracting water from Haolebaoji, a grasslands region 100 kilometers away in the heart of the Mu Us desert. The extraction of Haolebaoji's precious water resources, is, however, spelling doom for thousands of farmers and herders and their traditional lifestyle.⁴⁸

When Greenpeace East Asia visited Haolebaoji in 2012, every artesian well in the region had run dry and groundwater had dropped by as much as 100 meters. Over 80,000 hectares of land are now affected by severe water scarcity, and even drinking water is hard to come by. A local says: "In the past, anything you planted would grow. But now, there is no water. All the trees have already died, and the grasslands have turned into deserts."⁴⁹

Over the past years, villagers have sent countless appeals to the company and also petitioned the authorities in Beijing. They are demanding that Shenhua stop its water grab as "it is threatening our survival and the survival of our children's generation."

China Goes Global

"All the trees
have died, and
the grasslands
have turned into
deserts."
Farmer, affected
by Shenhua's
operations

Although China meets 92% of its coal demand through its own mines, the 289 million tons it imported in 2012 make up almost a quarter of the world's international coal trade. China's appetite for coal is therefore a driving force for many expansion projects in other countries. Nowhere is this more evident than in Australia, where huge coal developments are being pushed ahead in the Galilee Basin with the aim of supplying the Chinese market. One has to almost appreciate the honesty of companies like Australia's Waratah Coal, which has christened its largest new mine development (1.1 billion tons of proven coal reserves): "China First."⁵⁰

The means by which Chinese companies are securing future coal supplies abroad range from strategic partnerships, long-term supply contracts and off-take loan agreements to direct investments in coal infrastructure projects and joint mining ventures. Such arrangements are being made from Mongolia to South Africa. Increasingly, Chinese companies are, however, simply opening up their own coal mining subsidiaries in countries like Canada, Tanzania, Zambia or Australia.⁵¹

At a Crossroads

While huge investments were made in the coal mining sector in China from 2009 – 2011, the country is now in the midst of a rebalancing effort as the heavy environmental and health costs of its coal dependence can no longer be ignored. As the renewables sector has also begun to boom, the country is clearly at a crossroads. Whatever route China takes will have immense effects for its own people and its own environment, for the environment in other countries, where coal mines supply the Chinese market, and last, but not least, for the Earth's climate. We're all watching what the dragon will do.

48 "Thirsty Coal 2: Shenhua's Water Grab," Greenpeace East Asia, 2013

49 <http://www.greenpeace.org/eastasia/specials/gpm03/hope-grasslands-become-green/>

50 <http://waratahcoal.com/china-first-coal-project>

51 http://www.sourcewatch.org/index.php?title=International_Chinese_coal_projects

Top Coal Mining Banks for China

The following chart shows the 8 biggest financiers of the Chinese coal mining sector since 2011. With over 3 billion euros, the Industrial and Commercial Bank of China is a clear number 1. What is also notable is that there was relatively little direct lending. Instead, banks raised most of the capital for mining companies by underwriting bond issues. In 2012, there was, however, one huge loan to Shenhua of over 3.15 billion euros, which was collectively provided by the top 4 banks in the chart. Foreign banks play only a very small role in the sector. Among these, Citi, Deutsche Bank and Barclays hold the top position through their participation in a bond issue for Vale’s China operation.

Banking on Chinese Coal, 2011 - mid-2013

