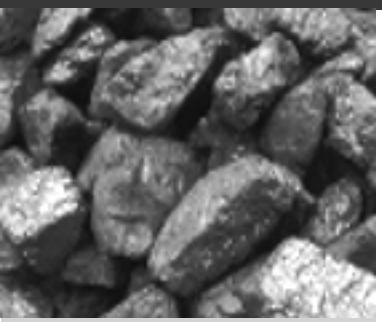


A Quest To Curb Coal Use

Key Points

- China burns more coal than any other nation – a major reason it has become the world's leading annual emitter of greenhouse gases.
- China is also an emerging leader in deploying cleaner-coal technologies. It has built more high-efficiency coal-fired power plants than any country, for instance, helping improve the technology and drive down costs.
- China is pioneering technologies that could enable power plants to capture and store warming gases such as carbon dioxide.

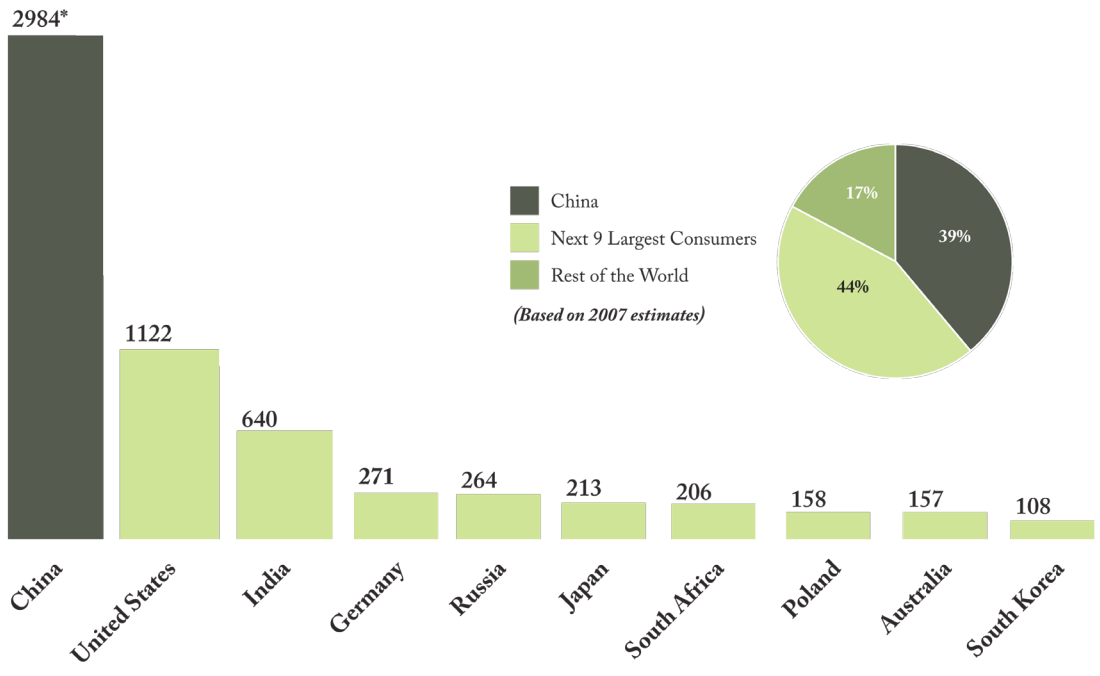
COAL USE IN CHINA: THE HIDDEN COST OF CHEAP FUEL

Cheap, easy to extract, and in abundant supply, coal is fueling China's economic rise. China burns more coal than any other nation, both as a proportion of energy supply (70%) and in absolute terms (~3 billion tons in 2008, more than twice the U.S.).[i,ii] Coal power maintains a 3-1 cost advantage over the next cheapest fossil fuel. And coal is also a major domestic resource in China.

Unfortunately, coal emits more CO_2 per unit energy than any comparable fuel. And while cheap coal power has fueled a multiple-decade economic boom, it has also made China the top-ranking annual emitter of greenhouse gases.[iii] Such concerns have China aiming for different top-ranking: to become a global leader in developing ways to make coal "greener". In this area, experts say China is making progress, building some of the world's cleanest and most efficient new coal-fired plants, and launching pioneering experiments in capturing and storing CO_2.

"China has an unprecedented opportunity to become a major player in the global market for cleaner, more efficient coal technologies," concluded a recent report by the International Energy Agency "It has already developed some unique technologies that other countries should sensibly adopt, and will certainly create more."[iv]

TOP TEN COAL CONSUMERS (2008)



*Million short tons

Data Source: U.S. Energy Information Administration, 2009.

COAL-FIRED ELECTRICITY DEMAND

China is, by far, the world's leading producer and consumer of coal. In 2008, for instance, it mined and consumed nearly 3 billion metric tons of coal. That is more than the total burned by the next three largest consuming nations combined (the United States, India and Germany).[v]

80% of China's electricity is generated by coal-fired power plants.[vi] To keep pace with rising demand for power, China is building an unprecedented number of new coal-fired stations – an average of one to two per week by some estimates.[vii] Energy analysts expect that China's annual coal consumption could surpass 3.2 billion tons by 2020, and dramatically increase emissions of warming gases and other pollutants.[viii] Although China's coal reserves are substantial, they are not inexhaustible – the most easily-mined deposits could be significantly depleted within this century.[ix]

POLICIES TO REDUCE COAL CONSUMPTION GROWTH

In a bid to avoid that scenario, China is backing a wide range of efforts to curb the rapid growth in the use of coal, and looking for cleaner ways to burn the fuel. These efforts are part of a larger plan, adopted in 2005, to save the equivalent of more than 600 million tones of coal by 2010 (see ChinaFAQs fact sheet: "An Intense Push for Efficiency"). To help reach that goal, China is:

- Adopting a standard requiring all new coal-fired power plants to be state-of-the-art commercially available or better technology by the National Reform and Development Commission (China's powerful agency in charge of energy and economic planning). As a result, today most of the world's most efficient coal-fired power plants are being built in China.[x] By June 30, 2009, an accumulated number of 7467 small thermal power units were shut down, with total capacity removed reaching 54GW. This could result in a reduction of an annual amount of 1.06 million tons of SO_2 and 124 million tons of CO_2 emissions.[xi]

- Encouraging new power plants to install advanced technologies – particularly coal "gasification" – that are more efficient, reduce pollution, and could allow CO_2 capture in the future. China has now built more of these advanced plants than any other nation, which will enable it to deploy CCS technology down the road. (see ChinaFAQs fact sheet: "Taking Steps to Capture Carbon").

- Implementing tax, market reform and incentive programs designed to spur more efficient use of coal by the nation's largest 1,000 industries. This effort is on track to meet – and exceed – targeted savings of 100 million tons of coal equivalent by 2010. (see ChinaFAQs fact sheet: "Efficiency, A Thousand Companies At A Time").

- Setting energy efficiency standards for buildings and consumer goods that, if fully implemented, will slow the growth in demand for coal-fired electricity.

- Investing in alternatives to coal, including nuclear, hydro, solar and wind energy. In just the last few years, for instance, China has more than doubled its construction of wind turbines, and now has nearly 10% of the world's total. Domestic solar, hydropower, and biomass have also grown rapidly and ambitious targets are set for 2020. (see ChinaFAQs fact sheet: "Renewable Energy in China: An Overview").

Even if all of these efforts succeed, however, China's coal consumption is still expected to grow in the foreseeable future. That has imposed some urgency on accelerating the next steps along the road to cleaner coal – steps that many analysts say will require more global investments in R&D and substantial international technical collaboration.

Chinese and American agencies and companies have already forged partnerships to develop new, climate-friendlier technologies. And Chinese companies have also purchased existing technologies and expertise from U.S. companies, suggesting the potential for a vibrant and lucrative market. These projects highlight the interests the world's two leading coal consumers – and two largest emitters of greenhouse gases – share in reducing the threat of coal-fired power to the global climate.

This fact sheet is a product of ChinaFAQs, a joint project of the World Resources Institute and experts from leading American universities, think tanks and government laboratories. Find out more about the ChinaFAQs Project at: http://www.ChinaFAQs.org/.

Notes

[i] Rosen, D. and Houser, T. (2007). "China Energy: A Guide for the Perplexed." China Balance Sheet: a Joint Project by the Center for Strategic and International Studies and the Peterson Institute for International Economics.

[ii] US Energy Information Agency (EIA), 2009. Available at: http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=1&pid=1&aid=2.

[iii] Netherlands Environmental Assessment Agency (June 2008), "China contributing two thirds to increase in CO2 emissions." Available at: http://www.pbl.nl/en/news/pressreleases/2008/20080613ChinacontributingtwothirdstoincreaseinCO2emissions.html.

[iv] International Energy Agency (2009), "Cleaner Coal in China." Available at: http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2089.

[v] EIA, 2009.

[vi] Rosen and Houser (2007), "China Energy: A Guide for the Perplexed".

[vii] See, for instance: Fernando, Venezia, Rigdon, and Verma (2008), "Capturing King Coal: Deploying Carbon Capture and Storage Systems in the U.S. at Scale," a World Resources Institute report in conjunction with Goldman-Sachs, p. 8.

[viii] International Energy Agency (2009), "Cleaner Coal in China".

[ix] Ibid.

[x] International Energy Agency, (2009) "Cleaner Coal in China." p. 104 and 117.

[xi] China's Ministry of Science and Technology. Aug 13, 2009. "China will issue a clean energy development plan by the end of this year." http://www.most.gov.cn/gnwkjdt/200908/

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