

# ChinaFAQs

## The Network for Climate and Energy Information



# China's Energy Security Dilemma

## Key Points

- Historically, China's leaders have responded to the rising demand for energy with efforts to increase supply.
- In recent years, however, these leaders have recognized that China cannot just grow its supply of energy, but must also find ways to curb demand.
- While China is taking significant steps to curb demand, the nations' leadership remains wary of embracing policies to reduce demand that could be politically unpopular and slow economic growth. As a result, China faces longer-term risks of energy shortages and economic and environmental problems.

**China's leaders confront a maze of conflicting forces and difficult choices as they try to meet their nation's rapidly growing appetite for energy – and realize sometimes competing economic, environmental and political goals. The “leadership is deeply fearful that shortages of energy could derail economic growth, slow the job creation machine, and potentially fuel social instability,” concludes Mikkal Herberg, a former oil industry executive and global energy expert with the Pacific Council on International Policy in Los Angeles, California.<sup>i</sup>**

Those energy security fears, however, have opened the door to policy shifts that could dramatically transform how China produces and uses energy -- and potentially help curb its emissions of greenhouse gases. “It seems likely,” Herberg concludes in a recent analysis, “that China's leadership will be forced over the next five to ten years to adopt a fundamentally new energy model based on much stronger demand management, radically improved energy efficiency, and a much cleaner energy mix.”<sup>iii</sup> But, he adds, that forecast will depend heavily on the ability of China's leaders to tackle difficult energy issues sooner – or face potentially bigger problems later.

## A GROWING GLOBAL CONSUMER

At the heart of China's energy security dilemma is soaring consumption. From 1980 to 2000, China was able to grow its economy four-fold while just doubling energy use. Between 2001 and 2007 however, rising incomes, urbanization and growth in energy-intensive industries caused energy demand to rise by 86%. Over the next 25 years China is expected to account for 38% of new global energy demand. It will rely increasingly on imported oil, gas and coal to meet domestic needs. Each major energy source poses a challenge for China:

- **Oil.** Oil demand has doubled roughly each decade since the mid-1980s, and although China has been Asia's largest producer since the 1960s, it became a net importer in 1993. China surpassed Japan in 2003 to become the world's second largest oil consumer and third largest importer; by 2007, it was importing roughly half of its oil, a figure that the International Energy Agency (IEA) projects will increase to three-fourths in 2030. As China's transportation sector expands in the coming decades, policies to reduce oil demand will be critical.

- **Natural Gas.** China is poorly endowed with domestic natural gas resources, and its share of natural gas in power generation is significantly below the global average. Partly as a result, China relies more heavily on coal-fired electricity than other countries. To change this, government plans call for gas's share of overall energy consumption to rise from its current 3 percent to 8 percent by 2020. As early as 2010, however, demand is likely to exceed domestic production. Imports could account for 40 percent of China's gas needs by 2020, according to forecasts by the U.S. Department of Energy and Lawrence Berkeley National Laboratory, potentially requiring the construction of expensive new LNG infrastructure and creating complex diplomatic challenges in securing access to foreign supplies.
- **Coal.** Coal accounts for two-thirds of China's total energy consumption and 80 percent of electricity generation. Consumption is likely to more than double by 2030. In 2007 it appears China became a net importer for the first time and began to influence world prices, and its imports are expected to grow.
- **Electricity.** Demand for electricity is expected to triple from 2005 levels by 2030. The IEA forecasts that 70 percent of that new demand will be met by coal-fired power plants, with hydro, nuclear and renewables producing the rest.

## FROM "GOING-OUT" TO CUTTING BACK: SUPPLY VS. DEMAND SOLUTIONS

Traditionally, China's leaders responded to rising demand for energy by focusing on increasing the supply. Chinese officials have taken steps to expand domestic supply, including reshaping the oil industry to improve operating efficiency and opening new areas to oil and gas exploration. Such supply-side moves have been supported by what Herberg dubs a "growth coalition":

an informal alliance of government officials, industry groups, and provincial leaders with vested interests in growing energy demand and investment. In line with this tack, the central government has also pursued the construction of major oil and gas pipelines connecting China with neighbors including Russia, Kazakhstan, and Turkmenistan in a bid to increase overland imports of energy.

Also on the supply side, China's government has promoted a loosely-coordinated "going-out" strategy of encouraging China's National Oil Companies (NOCs) to secure control over and access to overseas energy supplies, in some cases by buying equity stakes in foreign oil companies. This strategy has been characterized in the West as "mercantilist" and led to occasional Sino-American tensions. Most explosively, when a Chinese NOC attempted in 2005 to buy out the American oil corporation Unocal, the resultant political backlash in Washington (over concern that this would undermine American energy security) led the Chinese company to withdraw its bid. Herberg notes that this episode highlights the strategic mistrust in the United States surrounding China's energy diplomacy.

In the past few years, however, realization among senior Chinese policymakers has grown that "supply side efforts will not suffice to meet China's energy security needs, and that steps need to be taken to reduce demand growth at the same time."<sup>iii</sup> The need to curb energy demand was driven home, in part, by severe energy shortages that created several crises over the last decade, increasing price instability in world oil markets, and growing concerns over the public health and environmental consequences of energy use, including climate change. Moreover, it became clear to the leadership that energy supplies acquired via the "going-out" strategy are too small in scale to offer much security, and that China will still have to rely on open international markets – not physical control of energy resources – to meet its growing needs.<sup>iv</sup>

## THE ROAD AHEAD: OPPORTUNITIES AND CHALLENGES

These factors have set the stage for policies to curb domestic energy consumption. In recent years the government has set tough new efficiency goals, imposed taxes and regulations designed to curb demand and curb emissions of greenhouse gases, and elevated the status of government bodies responsible for energy and the environment. It has also sparked investments in and aggressive targets for domestically-produced renewable energy sources [see [ChinaFAQs: Renewable Energy in China - An Overview](#)].

So far, China's leaders have been reluctant to take more radical steps to reduce energy demand, such as allowing market forces to set prices for electricity or eliminating subsidies for oil use. The top leadership "remains reticent to face up to the more controversial requirements of reform... for fear that higher costs and market price volatility will slow job creation and risk provoking social and political unrest."<sup>v</sup> Still, Herberg says there are growing signs that China's leaders are at least considering trading the short-term pain of pursuing controversial reforms in order to realize longer term gains for energy security and the environment. "The main question," he concludes, "is whether this shift is occurring rapidly enough to allow for a gradual transition over a manageable period of time toward an increasingly effective and robust energy policy framework."<sup>vi</sup> The US and China have common interests in maintaining stability in global energy markets, avoiding supply disruptions, and enhancing the environmental

sustainability of their energy mix. American engagement with China on strategic energy issues will be an important, though challenging, component of the bilateral relationship going forward.

This fact sheet is largely based on Mikkal Herberg's "Fueling the Dragon: China's Energy Prospects and International Implications," Chapter 10 of *Energy and the Transformation of International Security Policies: Towards a New Producer-Consumer Framework*. Eds. Andreas Wenger, Robert W. Orttung, and Jeronim Perovic, Oxford Institute for Energy Studies, Oxford University Press (2009) pp. 269-297.

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### Notes

<sup>i</sup> Mikkal Herberg 2009, "Fueling the Dragon: China's Energy Prospects and International Implications," p. 20.

<sup>ii</sup> Herberg, 2009, "Fueling the Dragon," p. 2.

<sup>iii</sup> Ibid, p. 9.

<sup>iv</sup> Herberg, 2007, Testimony to US-China Economic and Security Review Commission, p. 3.

<sup>v</sup> Herberg, 2009, "Fueling the Dragon," p. 28.

<sup>vi</sup> Ibid, pg. 2.

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World Resources Institute  
10 G St NE  
Washington, DC 20002  
202-729-7600  
[www.ChinaFAQs.org](http://www.ChinaFAQs.org)