

“Unless the world’s existing powers are prepared to descend into the sort of resource-driven geopolitical competition that resulted in World War I . . . they must make room at the table for an energy-hungry China.”

## Fueling the Dragon: China’s Strategic Energy Dilemma

MICHAEL T. KLARE

**T**he draft proposal for China’s 11th five-year plan for economic and social development, covering the period from 2006 to 2010, sets only two specific, quantitative objectives: that per capita gross domestic product in 2010 should be double that of 2000; and that energy input per unit of GDP should be 20 percent lower than it was in 2005.

In a sense, these two ambitious goals highlight the central dilemma facing Chinese policy makers in the years ahead. Although the Communist Party leadership seeks to steadily improve the livelihood and lifestyle of ordinary Chinese citizens, thereby ensuring their support for (or acquiescence to) the regime, it must somehow find a way to deliver the vast increases in energy that will be needed to satisfy the first goal. With the recent increases in energy prices and growing concern about the future adequacy of global oil stocks, China’s leaders will have to walk a precarious tightrope to balance these competing and very demanding objectives.

Securing the additional supplies of energy needed to sustain growth and satisfy consumer demand will pose both an economic and a political challenge for the Chinese leadership. The economic challenge arises from the mammoth financial investments that will be required: hundreds, perhaps thousands of new electricity-generating plants will have to be built, along with numerous oil refineries, natural gas facilities, coal mines, and hydroelectric dams, all costing in the billions of dollars.

The political challenge derives from the fact that China will not be able to rely exclusively on domestic sources to satisfy its future energy requirements but will have to obtain ever-increasing supplies of

oil and natural gas from abroad—in many cases, from the same sources that are also the target of avid acquisition efforts by American, European, and Japanese firms.

The older industrial nations have long consumed the lion’s share of world energy supplies; as recently as 1990, they accounted for three-fourths of total global energy usage. But now they face increasingly fierce competition from the newly industrialized countries of Asia. India, South Korea, Taiwan, and the Southeast Asian nations have joined the worldwide quest for additional energy—and the largest energy consumer by far among the emerging powers is China.

The resulting competition is driving up global energy prices and generating intense geopolitical friction among the major energy-importing states. In some instances, this friction has taken on a worrisome military aspect, as rival suitors offer various forms of military aid to potential suppliers of energy and so fuel regional tensions and arms rivalries. Although China is a relative newcomer to this sort of geopolitical contest, its pursuit of energy-cum-military ties with such countries as Iran, Sudan, Uzbekistan, and Venezuela has become a significant irritant in US-China relations.

Further complicating the picture is the environmental impact of China’s surging energy use. Because Beijing seeks to rely on domestic supplies for as large a share of its total energy mix as possible, and because the only source of energy that China possesses in great abundance is coal, the government’s future plans call for a substantial increase in coal consumption—from 1.4 billion tons in 2002 to an estimated 3.2 billion tons in 2025. If this projection proves accurate, and if Chinese utilities continue to rely on existing coal-burning technology, China will overtake the United States as the world’s leading emitter of climate-changing carbon dioxide by 2025. Only if Bei-

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ing can be persuaded to curb its consumption of coal or to adopt clean-coal technology on a very large scale will it be possible to avert a substantial buildup of greenhouse gases in the atmosphere.

How the Chinese leadership manages these competing goals and interests will prove to be one of the greatest tests facing Beijing in the years to come. At the same time, Chinese energy behavior will raise significant political and environmental concerns for the United States, Europe, Japan, and the rest of the world.

## THE BIG PICTURE

As might be expected, China's energy dilemma begins with the country's large population and rapid economic growth. Although Chinese citizens, on average, use considerably less energy than citizens of the United States and other highly developed countries—per capita energy consumption in China is about one ton of oil equivalent per year, compared to eight tons in the United States—the combined consumption of 1.3 billion people is bound to be substantial. More important than population, however, is the country's fast-paced economic growth, now averaging between 9 and 10 percent per year. Every increment in economic activity generates a comparable increase in energy demand, pushing the nation's total requirements ever higher.

The striking increase in China's energy demand is evident in data provided by the US Department of Energy (DoE). In the 12 years between 1990 and 2002, net energy consumption in China rose by 60 percent, from 27 to 43 quadrillion British thermal units (BTUs). It is projected to grow by another 153 percent by 2025, reaching 109 quadrillion BTUs. To better appreciate the scale and rapidity of this increase, consider that in 1990, China consumed less than half as much energy as the Western European nations; by 2025 it is projected to consume 44 percent *more* energy than all of those nations combined.

To satisfy this vast increase in demand, Chinese suppliers will have to increase their delivery of all forms of energy, including oil, coal, natural gas, hydropower, nuclear, and renewables such as solar and wind. As noted, the largest additional increment to China's net energy supply is likely to be provided by coal. But even if Beijing were to overlook the environmental consequences of depending so heavily on coal, it cannot rely on coal alone to provide all of the

extra energy that it will need. For some purposes, including transportation, it will also have to obtain expanded supplies of oil and natural gas, and this is where the geopolitical aspect enters the picture.

Oil is likely to be in particularly strong demand. Petroleum products are the main source of fuel for China's road, air, rail, and sea transportation systems, which are among the fastest-growing components of its vast and expanding infrastructure. To put this in perspective, China had only 14.5 million registered motor vehicles on the road in 2001; by 2030, this number is expected to jump to 130 million. The country is also building about 30,000 miles of highway every year to make room for all these additional vehicles. And it is building new or expanded airports to accommodate a sudden surge in domestic airline traffic (the number of air travelers in China more than tripled from 1990 to 2002, from 27 million to 84 million).

More cars and more air travel can only mean one thing: an ever-increasing thirst for petroleum products. At 4.5 percent per year, the growth rate of

China's oil consumption is now the highest of any country in the world. Assuming this rate continues unabated, the country's net consumption will jump from 5.2 million barrels

per day in 2002 to a projected 14.2 million barrels in 2025—at which point its total oil usage will exceed that of all other countries, save the United States.

China was once self-sufficient in petroleum: as recently as 1993, it produced and consumed approximately 3 million barrels per day. But Chinese oil output has increased only slightly, reaching just 3.5 million barrels per day in 2004, while consumption has soared. As a result, the gap between production and consumption has grown larger every year—and the only way Beijing has been able to fill this yawning gap has been through increased imports of foreign oil. In 2004, China's net oil imports amounted to 3.2 million barrels per day, or 48 percent of its total consumption; by 2025, its daily import requirement is expected to reach 10.7 million barrels, or 75 percent of consumption.

It is to procure all of these additional quantities of foreign oil that Chinese leaders and energy firms have been scouring the world for new supply sources—in some cases signing long-term contracts for the delivery of crude, in other cases acquiring equity shares in foreign oil fields.

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*Disputes arising from the competitive pursuit of foreign oil will play an increasingly critical role in the US-China relationship.*

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## IN SEARCH OF OIL

American observers are uncertain as to how much the Chinese government directly oversees the pursuit of foreign energy assets by Chinese firms. The three major Chinese oil companies—the China National Petroleum Corporation (CNPC), the China National Petrochemical Corporation (Sinopec), and the China National Offshore Oil Corporation (CNOOC)—are said to operate like independent, profit-making enterprises, conducting their own international operations. However, the government owns a very large stake in these firms, ranging from 80 to 90 percent, and chooses their top leaders. Government-owned banks provide low-cost loans to the firms, and Chinese diplomats often facilitate their efforts to negotiate exploration and drilling rights in foreign countries.

Although Chinese officials have never spelled out their objectives in wielding influence over the overseas operations of the major oil companies, their intentions are clear: to increase the number of countries supplying oil and gas to China and, wherever possible, to gain direct ownership over key foreign reserves. As recently as 1996, China imported 70 percent of its oil from just three countries: Indonesia, Oman, and Yemen. By 2003, it had established ties with a much broader range of suppliers, including Saudi Arabia (providing 17 percent of China's imports), Iran (14 percent), Angola (11 percent), and Sudan (5 percent). Chinese officials have traveled the world in pursuit of other sources of oil and gas, establishing supply arrangements and acquiring drilling rights in Brazil, Canada, Ecuador, Kazakhstan, Nigeria, Russia, and Venezuela.

That China is vigorously seeking to enhance its access to foreign sources of energy is not, in itself, a source of friction in international relations. After all, the United States, Britain, France, Japan, and other Western oil-importing countries have long competed among themselves for drilling rights in overseas producing areas, and have managed to divvy up the available supplies in a (relatively) amicable fashion. China may be a newcomer to this contest, but is not behaving noticeably differently from the other oil-seekers. Indeed, the "National Energy Policy" announced by President George W. Bush on May 17, 2001, calls for US officials to conduct the same sort of diplomatic quest in pursuit of foreign energy as that now being undertaken by Chinese officials.

In a world of ever-expanding petroleum supplies, China would simply use its abundant stockpiles of cash to buy up whatever energy it requires. There are, however, two major problems with this picture. First, there are growing indications that global oil supplies are not expanding fast enough to keep up

with rising international demand. And second, many of the world's most prolific sources of supply are already controlled by Western energy firms or by producer-owned national oil companies, forcing China to seek development opportunities in marginal areas or "pariah" states shunned by the other major importers.

## THE COMPETITION HEATS UP

For decades, the world supply of petroleum has grown in tandem with the steady rise in international demand. This has made possible the vast expansion of the global economy over the past 60 years and the emergence of the new Asian economic powerhouses, including China, India, Taiwan, and South Korea. Recently, however, significant doubts have arisen as to the oil industry's ability to continue boosting the available world supply at a rate commensurate with global demand. While some energy analysts insist that this is not a problem and that world supplies will continue to expand as needed, others believe that the growth rate of global oil supplies will soon begin to slacken and eventually reach zero—a condition known as "peak" oil output—after which the supply will begin to contract.

Until recently, most oil company executives and government energy experts have sided with those who believe that the moment of peak oil is still safely in the distant future. But lately there have been some conspicuous defections from this consensus. For example, the CEO of Chevron, David O'Reilly, has signed his name to full-page advertisements in leading newspapers expressing concern about oil's future availability. "One thing is clear," the advertisements state, "the era of easy oil is over."

It is impossible now to predict exactly how much oil will be available in the decades ahead to meet anticipated demand. The US DoE contends that there will be sufficient supply in the market in 2025 to satisfy projected demand of 119 million barrels per day—an increase of 35 million to 36 million barrels over current levels of output. If this projection proves accurate, there will be enough oil to meet China's projected demand of 14.2 million barrels per day, as well as the 27.3 million barrels sought by the United States, the 14.9 million sought by Western Europe, and the 6.8 million sought by Japan. Under this comfortable scenario, prices will remain relatively stable and severe energy shortages will be averted.

Unfortunately, given the concerns raised by Chevron's O'Reilly and other skeptics, one can have no confidence that this scenario will prevail. Indeed, it would be far more prudent to assume that global supplies will *not* expand sufficiently to

satisfy anticipated demand, that prices will rise significantly, and that the competition for whatever supplies are available will grow more intense and fractious. It is in this context that China's efforts to secure increased supplies of oil (along with the efforts of India, South Korea, and the other rising Asian economic powers) must be viewed.

How, exactly, this will play out cannot be foreseen. But we already have some early indications. One is price: with China and India becoming ever more significant players in an already crowded energy market, oil prices have risen much faster than expected even one year ago. In January 2005, the DoE projected prices in the \$30 to \$35 per barrel range for the period between 2005 and 2025; this January, it raised its projection for this period to between \$50 and \$55 per barrel.

Even more worrisome was the hysterical reaction in Congress to CNOOC's June 2005 effort to purchase the Unocal Corporation, a mid-sized American oil and gas producer.

Although CNOOC's bid for Unocal was \$2 billion higher than that proffered by Chevron, the other major suitor, US lawmakers were so

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incensed by the possibility that a Chinese company might gain control of American energy assets that they voted in August to place insurmountable obstacles in the way of CNOOC's purchase, forcing the company to withdraw its offer. The fact that Unocal's oil and gas reserves were mostly located in Asia to begin with, and played a negligible role in satisfying US energy demand, made little difference to those who voted against CNOOC.

The Unocal affair did not, in the end, produce a significant breach in US-China relations, and CNOOC has gone on to buy energy assets in other countries, including Nigeria. Nevertheless, the episode demonstrates just how intense the international competition over energy assets has become and highlights the very real possibility that this competition will inflame political ties among the major oil-importing countries. One analyst, Kurt Barrow of Purvin and Gertz (a Singapore-based consultancy), characterized the Unocal affair as the opening salvo in a new "war" over global oil supplies. "CNOOC lost the battle over Unocal," he told *The New York Times*, "but will continue to wage the war toward acquiring overseas energy assets to support China's growing energy needs."

This may seem overly rhetorical—but it is not seen that way by those in Congress who view

China's avid pursuit of foreign oil assets as a "national security" matter, since it poses a threat to America's own essential energy supplies.

## WHERE OTHERS FEAR TO GO

The potential for friction arising from an increasingly competitive search for diminishing supplies of oil is made more severe by the second key aspect of this equation: the fact that many of the world's most prolific fields are controlled by the major Western oil firms or the producing countries' state-owned firms (such as Saudi Aramco and the Kuwait Petroleum Corporation). State-owned firms dominate production in most of the Middle East, while the Western firms have established a commanding position in such other producing areas as sub-Saharan Africa and the Caspian Sea basin.

Chinese energy officials would no doubt like to obtain a foothold in these areas, but have often been frustrated by the well-entrenched presence of these

competing firms. For example, when CNOOC and Sinopec jointly sought to purchase a one-sixth stake in the consortium developing the large Kashagan

reservoir in Kazakhstan's sector of the Caspian Sea, the original members of the consortium, including Exxon-Mobil, Royal Dutch/Shell, and Conoco-Philips, exercised their "right of first refusal" to exclude the Chinese firms and acquire the stake for themselves.

Having been excluded in this manner from many of the more attractive producing areas, the Chinese have opted for the only path that appears open to them: the pursuit of reserves in marginal producing areas and in "pariah" states like Iran, Sudan, and Uzbekistan. These countries have been largely shunned by firms from the United States and its allies, whether for human rights reasons or, in Iran's case, the pursuit of nuclear weapons.

China's position in Sudan is particularly noteworthy. CNPC currently holds a 40 percent stake in the Greater Nile Petroleum Operation Company, the leading producer in Sudan, and a substantial stake in other Sudanese fields; it has also constructed a 930-mile pipeline from southern Sudan to Port Sudan on the Red Sea and a refinery in Khartoum. In Iran, Sinopec has helped build a pipeline from the Caspian Sea to Tehran and is involved in the development of natural gas reserves.

The fact that China has established such close ties to countries considered unfriendly to the

United States is seen in Washington as provocation enough. But, in its efforts to cement relations with these suppliers, Beijing has also provided them with military and diplomatic aid, further provoking ire in Washington. "In countries like Uzbekistan, Sudan, and Burma, China has openly supported regimes whose human rights violations, support for terrorism, or proliferation activities have engendered worldwide opposition," the DoE observed in a 2006 congressionally mandated review of Chinese energy policy. "As a long-term trend, China's behavior in this respect runs counter to key strategic goals of the United States."

The seriousness with which top US officials view these activities was evident in a 2005 Pentagon analysis of Chinese strategy and capabilities, *The Military Power of the People's Republic of China*, which for the first time highlighted energy competition as a significant factor in US-Chinese security affairs. In a section on "Resource Demand as a Driver of Strategy," the report observed, "Beijing's belief that it requires such special relationships in order to secure its energy access could shape its defense strategy and force planning"—thus, presumably, posing a potential threat to US national security.

This concern is being expressed at a time when China is importing only about 3 million barrels of

oil per day, less than one-third of the current US import tally. Imagine the degree of alarm one might expect in 2025, when China's oil imports are expected to have risen to 11 million barrels per day, or two-thirds of America's projected imports. Although it is impossible to predict the future course of international relations, it would appear safe to assume that disputes arising from the competitive pursuit of foreign oil will play an increasingly critical role in the US-China relationship, possibly eclipsing such other concerns as Taiwan and the bilateral trade imbalance.

## THE STRUGGLE FOR GAS

As time goes on, China will not only show an increasing thirst for petroleum. It also will need expanded supplies of natural gas. This, too, could produce significant friction in international affairs.

At present, China consumes a relatively small quantity of natural gas, about 1.2 trillion cubic feet per year, which is a mere 5 percent of the amount consumed in the United States. But China is expected to consume far more natural gas in the future, mostly to fuel electrical power plants but also as a source for fertilizer, hydrogen, and assorted petrochemicals. As Beijing becomes more aware of the environmental effects of over-reliance on coal,







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moreover, it is likely to depend increasingly on natural gas to generate electricity, further ramping up demand. As a result, China's gas consumption is expected to grow by 7.8 percent per year—the highest rate of any large economy. Just as in the case of oil, supplying all of this additional natural gas will prove a major challenge for the Chinese government.

Chinese officials would prefer to rely on domestic sources for as large a share of the needed gas as possible, and so have invested considerable funds in efforts to develop promising fields in the Tarim Basin of Western China and to transport this gas to energy-starved areas on the coast. But these sources are not sufficient to satisfy China's growing needs, and so Beijing has had to look elsewhere for additional supplies—once again, generating various forms of international antagonism.

The world's largest reservoirs of natural gas are found in Iran and Russia, and China has sought supplies from both—causing problems with the United States in the case of the former, and with Japan in the case of the latter. In October 2004, Sinopec signed a 25-year, \$100 billion contract with Tehran for the production and export of up to 10 million tons per year of liquefied natural gas to China and for participation in the construction of a refinery for natural gas condensates. Although details of this plan are still being worked out, it could result in a major infusion of new capital into Iran, thus frustrating US efforts to isolate that country and thereby impede its efforts to acquire nuclear weapons.

The problem with Japan is of a different character, entailing competition over the ultimate destination of the vast gas supplies recently discovered off the coast of Sakhalin Island, in Russia's Far East. Japanese firms have provided much of the capital and technology for development of these fields, and Tokyo has always assumed that the resulting output would be carried southward by pipeline to Japan. Recently, however, Chinese officials have been negotiating with the Sakhalin consortium for a substantial share of the field's gas supplies and for the construction of a pipeline heading west, to China. Although the Russian government and its corporate partners in the Sakhalin project have yet to decide on the ultimate destination of this gas, the very fact that China has swooped in and attempted to capture a large share of it has produced considerable anger and resentment in Japan.

An even more serious dispute with Japan has arisen over the development of offshore gas fields in contested waters of the East China Sea. Chinese and Japanese geologists believe that considerable

gas lies in the Xihu Trough, a deep undersea strip located roughly midway between China's east coast and Japan's southernmost islands. Citing provisions of the United Nations Convention on the Law of the Sea, Japan claims that its offshore boundary lies at the median line between the Chinese and Japanese coasts, putting it over or adjacent to the Xihu Trough. China, citing an older rule, insists that its outer boundary extends to the very edge of the continental shelf, much farther to the east.

Recently, CNOOC and Sinopec have been drilling right at the edge of the median line claimed by Japan, drawing gas from what Tokyo believes is Japanese territory but China claims is its own. Both sides have periodically deployed warships in the area, provoking a number of threatening naval encounters—none of which has yet entailed actual gunfire, but creating a very real risk of someday doing so. The gas dispute has also helped stoke rising anti-Chinese hostility in Japan and anti-Japanese hostility in China, complicating efforts to resolve the dispute peacefully.

## THE WORLD'S DILEMMA

With China's need for imported energy certain to grow, and the future availability of abundant oil increasingly in doubt, the risk of crisis and conflict over access to vital resources will become increasingly severe. Viewed in this light, the potential for conflict is not a "China problem" but a global dilemma. Unless the world's existing powers are prepared to descend into the sort of resource-driven geopolitical competition that resulted in World War I and many lesser conflicts, they must make room at the table for an energy-hungry China. Efforts to exclude China from promising energy deals, such as the Kashagan field in the Caspian Sea and the Unocal sale in the United States, will only inflame tensions and drive Beijing to pursue more risky arrangements, with unpleasant international repercussions.

At the same time, the eventual peaking of world oil production and the environmental consequences of global reliance on fossil fuels can only be addressed on the international level, involving close cooperation among all key parties, including China.

It is essential, therefore, that the international community view China's strategic energy dilemma in a sympathetic manner. The international community needs to work with Beijing to help diversify its sources of energy and, along with everyone else, accelerate the development of environmentally friendly energy alternatives such as clean-coal technologies, biofuels, wind, solar, and hydrogen. ■