

Chinese Energy and Asian Security

by Felix K. Chang

In early March 1997, a Chinese oil rig, the *Kantan III*, entered the waters between Hainan Island and the Vietnamese coast to explore for oil and natural gas in what Beijing considered a part of its Ledong exploration area. Vietnam, claiming the same area as part of its Block 113, protested vigorously. After some inconclusive talks between the two countries, the oil rig withdrew. About a year later, Vietnam again complained when a Chinese exploration ship and two armed fishing boats sailed near the Spratly Islands. These vessels also withdrew without incident.¹

Some have asserted that events such as these “have shown a consistent motivation: a growing desperation by Beijing to control the potentially lucrative [energy] resources of the region”—suggesting that China might forcibly appropriate energy resources in the future. To be sure, previous disputes in the Paracel and Spratly Islands in 1974 and 1988 produced brief armed clashes. But if the seizure of energy resources were a high priority, then it is somewhat surprising that China failed to take greater action during the Asian financial crisis in late 1997 and 1998, considering its relative military strength and Southeast Asia’s economic and political disarray at the time. Instead, Beijing helped to stabilize Southeast Asian economies by refusing to allow a devaluation of its currency. Two years later, it proposed closer

¹ “Oil-Prospective Spratlys Still a Flashpoint,” *Oil and Gas Journal*, Oct. 25, 1999, pp. 35–37; “‘Intrusion’ Ships Have Left Spratly Isles, Says Vietnam,” Reuters, May 23, 1998; Mure Dickie, “China Says Accelerating Border Talks with Vietnam,” Reuters, July 15, 1997; Scott Hillis, “China’s Jiang Meets Vietnam’s Do Muoi in Beijing,” Reuters, July 14, 1997; Jane Macartney, “China, Vietnam Wrap Up Talks, No Results Announced,” Reuters, Apr. 11, 1997; Michael Vatikiotis et al., “Drawn to the Fray,” *Far Eastern Economic Review*, Apr. 3, 1997, pp. 14–16; and “A Rig Too Near,” *Economist*, Mar. 29, 1997.

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economic ties and a free-trade pact with Southeast Asia rather than capitalize on the continued troubles of some countries in the region.²

While access to adequate and reliable energy resources remains vital to China's economic growth strategy, it is unclear whether the seizure of those resources is in China's plans so long as other means of acquiring them are available. Economic growth is unquestionably important to Beijing's leaders and the legitimacy of their rule, in light of the decline of communism as a unifying ideology. Since energy is so important to sustained economic growth, it is not surprising that energy self-sufficiency has long been a concern for Beijing. Still, future increases in Chinese energy consumption are certain if China is to meet the lofty goals of industrial modernization and economic expansion at a 7 percent annual growth rate outlined by Jiang Zemin in the Tenth Five-Year Plan. China will have to find new energy resources as well as undertake energy-efficiency measures, conservation, and especially energy price reform.³

The Shift from Coal to Oil and Natural Gas

In its search for energy self-sufficiency, China has long relied on coal and, with 11.2 percent of the world's reserves, could continue to do so well into the future. In addition, coal has in the past satisfied another pressing Chinese need in that mining, a highly labor intensive enterprise, directly employed over 14 million people by the late 1980s. Given its poor coal transportation infrastructure and growing demand for energy, Beijing even encouraged local townships and individuals to open small coal mines so that local areas could meet their own energy needs. Eventually, some 80,000 such

² Quotation from Michael Studeman, "Calculating China's Advances in the South China Sea: Identifying the Triggers of 'Expansionism,'" *Naval War College Review*, Spring 1998, pp. 68–90. See also "The Best Things in Life," *Economist*, Nov. 30, 2000; Seth Faison, "Even As Asians Worry, China Is Unlikely to Devalue," *New York Times*, Aug. 11, 1998; "China's Currency: About to Crack?" *Economist*, Sept. 26, 1998; Peter Passell, "Devalue the Yuan? China Doesn't Seem About to Do That," *New York Times*, Feb. 26, 1998; "East Asia's Whits the Middle Kingdom," *Economist*, Feb. 14, 1998; "China Tries to Assuage SE Asia's Worries," Reuters, Dec. 16, 1997; Mamdouh G. Salameh, "China, Oil and the Risk of Regional Conflict," *Survival*, Winter 1995–1996, pp. 133–46; Philip Shenon, "China Sends Warships to Vietnam Oil Site," *New York Times*, July 21, 1994; John W. Garver, "China's Push through the South China Sea: The Interaction of Bureaucratic and National Interests," *China Quarterly*, Dec. 1992, pp. 999–1028; Kim Woodward, *The International Energy Relations of China* (Stanford, Calif.: Stanford University Press, 1980), pp. 1–35; and Selig S. Harrison, *China, Oil, and Asia: Conflict Ahead?* (New York: Columbia University Press, 1977), pp. 10–56, 189–212.

³ Otherwise, China could again experience energy shortages such as those of the 1980s, which were estimated to have cost the Chinese economy as much as 10 percent of its total industrial output at the time. Owen Brown, "China's 5-Yr Plan Sets Big Goals for Reform, Economy," *Dow Jones Newswires*, Oct. 31, 2000; Ni Weidou and Nien Dak Sze, "Energy Supply and Development in China," in *Energizing China: Reconciling Environmental Protection and Economic Growth*, ed. Michael B. McElroy, Chris P. Nielsen, and Peter Lydon (Cambridge, Mass.: Harvard University Press, 1998), pp. 67–118; and Jonathan E. Sinton, David G. Fridley, and James Dorian, "China's Energy Future: The Role of Energy in Sustaining Growth," in *China's Economic Future: Challenges to U.S. Policy*, ed. Joint Economic Committee, Congress of the United States (Washington, D.C.: U.S. Government Printing Office, 1996), pp. 260–61.

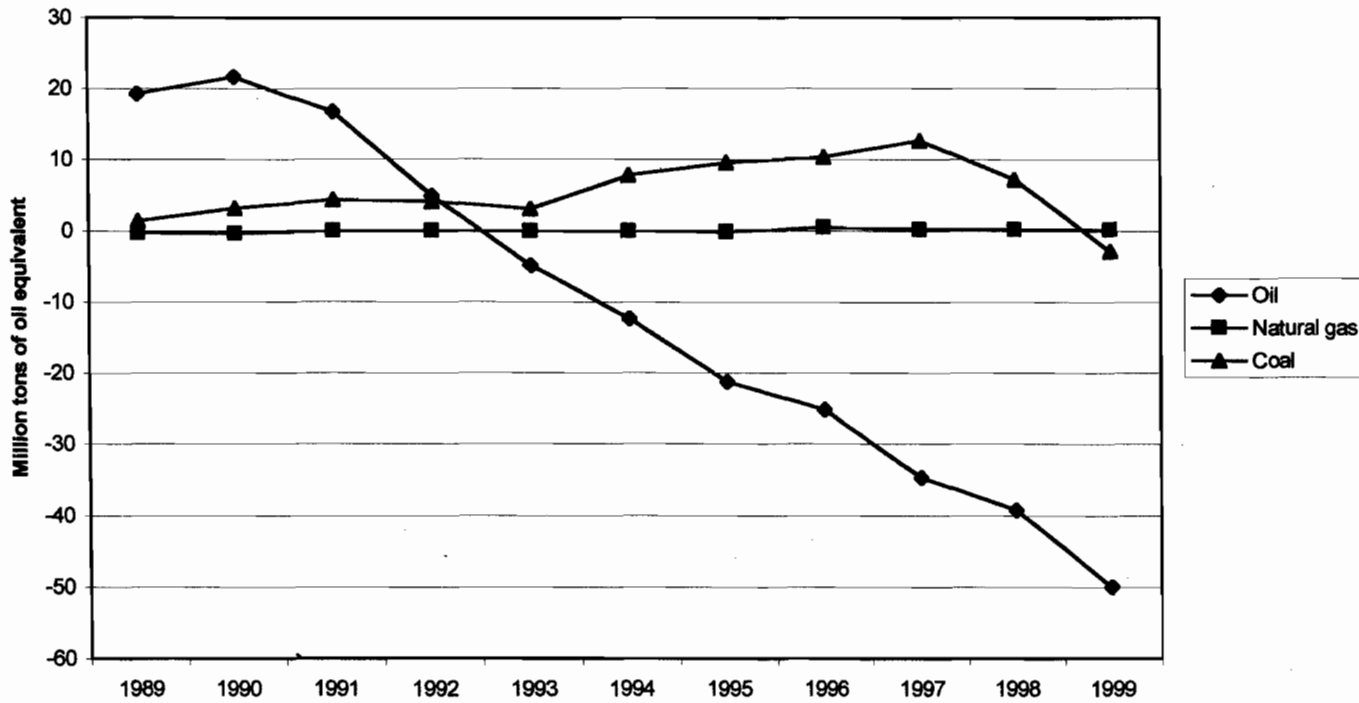
mines provided roughly one-third of China's total coal output. But these small mines were highly inefficient, and as much as 50 percent of the recoverable coal was often wasted. Moreover, the coal they produced had high ash and sulfur content because most of these mines lacked coal-washing equipment. To improve operations, many mines were privatized and a number of large-scale mines were created in northern provinces, where two-thirds of China's coal is located. Beijing even invited foreign companies to invest, as Occidental did in the An Tai Bao Mine, one of the world's largest open-pit coal mines.⁴

Meanwhile, China also explored for oil. In 1960, 40,000 workers were dispatched to Daqing to develop the oil resources in what became known as the "Daqing Spirit." Eventually, the fields there came to generate about one-third of the country's petroleum output. At Daqing and elsewhere, China rapidly developed its domestic oil industry in pursuit of self-sufficiency. But by 1993, Chinese consumption had exceeded its domestic production and the country became a net importer of oil. During the 1990s, Chinese oil production grew by 1.6 percent annually, but demand grew by 6.7 percent annually (see Figure 1). Looking ahead, the International Energy Agency anticipates that China's long-term level of oil imports might outstrip Beijing's estimates by a factor of three. Some Chinese academics, however, have blamed this situation "not on a lack of reserves, but a lack of competition within the oil industry, which resulted in little incentive for progress. Petrol prices have remained controlled, making waste almost endemic."⁵

By the early 1990s, the use of oil and coal for power generation and in residential settings had raised serious environmental concerns, especially in urban areas where air pollution reached high levels. At the same time, Beijing tried to restructure the coal industry and adjust prices that were, in

⁴ International Energy Agency, *Coal in the Energy Supply of China* (Paris: Organization for Economic Cooperation and Development, 1999), pp. 13–82; Richard P. Melnick and Professor W. Carl Kester, "The An Tai Bao Coal Mining Project," Harvard Business School case, Dec. 6, 1991, pp. 1–8; and Armand Hammer and Neil Lyndon, *Hammer* (New York: G.P. Putnam's Sons, 1987), p. 460.

⁵ Quotation from Lorien Holland, "The New Hot Fuel in China," *Far Eastern Economic Review*, Sept. 14, 2000, p. 16. The International Energy Agency estimates that China will import 200 million tons of oil in 2010 and 400 million tons in 2020. International Energy Agency, *China's Worldwide Quest for Energy Security* (Paris: Organization for Economic Cooperation and Development, 2000), pp. 1–85. "China Explosion Kills at Least 13," Associated Press, Nov. 7, 2000; Andreas Evagora, "China Oil Imports Forecast to Rise," Associated Press, Mar. 20, 2000; "China Oil Price Reforms a Major Step in Deregulating Its Petroleum Sector," *Oil and Gas Journal*, Aug. 10, 1998; Mun S. Ho, Dale W. Jorgenson, Dwight H. Perkins, "China's Economic Growth and Carbon Emissions," in *Energizing China*, pp. 241–66; Patrick Baert, "China Will Need More Oil Imports," Agence France-Presse, Oct. 13, 1997; Haijiang Henry Wang, "China's Deregulation, Expansion Not Enough to Restore Market Balance," *Oil and Gas Journal*, Sept. 29, 1997, pp. 33–39; Chang Weimin, "Oil Price Controls to Be Lifted Gradually," *China Daily*, Aug. 25, 1993; Seiichi Nakajima, "Price Reforms in China," *JETRO China Newsletter*, no. 102, Jan./Feb. 1993; "Energy Shortage Hinders Economy," *Beijing Review*, Jan. 4–10, 1993; Sandy Hendrym, "Policy Reform When It Suits," *Far Eastern Economic Review*, Oct. 29, 1992; Qu Geping, "China's Dual Thrust Energy Strategy: Economic Development and Environmental Protection," *Energy Policy*, June 1992; Larry Chuen-ho Chow, "The Changing Role of Oil in Chinese Exports, 1974–89," *China Quarterly*, Sept. 1992, pp. 750–65; and Wu Zongxin and Wei Zhihong, "Policies to Promote Energy Conservation in China," *Energy Policy*, Dec. 1991.



Sources: BP Amoco, *Statistical Review of World Energy*, Jun. 2000; National Bureau of Statistics, *China Statistical Yearbook 1999* (Beijing: China Statistics Press, 1999), p. 247.

Figure 1. Chinese Net Energy Flows

1989, artificially held at a level 75 percent below international prices and 31 percent below the cost of production. In January 1994, coal prices were gradually allowed to float, and many unprofitable mines were shut. In 1998, 420,000 miners were laid off. The following year, 31,000 mines were closed, and another 18,000 mines were closed in 2000, many of which had been run by townships and village enterprises.⁶

Fortunately for China, large natural gas deposits had been discovered in the country, and in the mid-1990s, Beijing began to switch its energy emphasis from coal to natural gas production. Natural gas, however, was not immediately embraced as an energy source. Initially more concerned with feeding its population than generating electricity, Beijing used a large portion of its natural gas to manufacture fertilizer. In Sichuan province, China's first and largest natural gas production area, over 45 percent of the gas was designated for that use. But by the late 1990s, China had eased its regulations governing the use of natural gas for fertilizer in response to the country's growing energy needs and lobbying from foreign oil companies. However, other impediments remain to the use of natural gas for energy. In addition to the lack of an adequate distribution network, especially in urban areas, foreign companies were banned from investing in most gas-fired power plants and residential pipelines until early 2000. Without the necessary capital, Chinese conversion to natural gas has been slow, despite the low natural gas prices set by Beijing. Only a few cities, such as Chongqing, have begun to switch their industrial and power-generating facilities from coal to gas.⁷

Among the most significant signals of Beijing's commitment to natural gas was its decision to import liquefied natural gas (LNG), a highly expensive

⁶ When China's coal industry restructured in 1997, 14 state-owned companies merged into four major firms: the China Coal Industry Import and Export Group; the China Coal Comprehensive Utility Group; the China Coal Construction and Development Group; and China Coal Materials and Equipment Group. Township and village enterprise coal mines are dangerous workplaces. Since they do not invest in the safety equipment that their larger counterparts do, their accident rates are 50 times higher than those at state-owned firms. In 2000, more than 5,000 miners were killed in accidents. "Running Out of Steam," *Economist*, Nov. 23, 2000; "Power Clash," *Economist*, May 13, 2000; *Country Report: China and Mongolia, 1st Quarter 2000* (London: Economist Intelligence Unit [EIU], 2000), p. 26; *Country Report: China and Mongolia, 4th Quarter 1998* (London: EIU, 1998), pp. 21–22; *Country Report: China and Mongolia, 1st Quarter 1997* (London: EIU, 1997), p. 36; Carl Goldstein, "Into the Black," *Far Eastern Economic Review*, Apr. 1, 1993; Tatsu Kambara, "The Energy Situation in China," *China Quarterly*, Sept. 1992, pp. 608–36; and Randolph Granzer, "The Energy Impediment to China's Growth," *OECD Observer*, Apr.–May 1989.

⁷ John McBeth, "Fuel of the Future," *Far Eastern Economic Review*, Sept. 14, 2000, pp. 14–15; Holland, "The New Hot Fuel in China"; David A. Pietz, "China's Natural Gas Sector Generating Great Expectations," *Oil and Gas Journal*, June 5, 2000, p. 60; Xu Yihe, "China Chongqing to Shift from Coal to Gas for Furnaces," *Dow Jones Newswires*, Apr. 4, 2000; *Country Report: China and Mongolia, 2nd Quarter 1999* (London: EIU, 1999), p. 31; Ian Johnson, "For Chinese, Natural Gas Is Growing in Importance," *Wall Street Journal*, Aug. 26, 1998; Keun-Wook Paik and Quan Lan, "China Preps to Expand Gas Output and Distribution Amid Challenges," *Oil and Gas Journal*, July 20, 1998, pp. 27–32; David Blumental and Gray Sasser, "Fuel for the Next Century," *China Business Review*, July–Aug. 1998, pp. 34–38; "China's Gas Production Will Not Meet Demand by 2020," Agence France-Presse, Oct. 14, 1997; and Li Peng, "China's Policy on Energy Resources," *Xinhua*, May 26, 1997; U.S. Embassy cable, Beijing 044975, Nov. 29, 1996.

process requiring liquefaction facilities in both the receiving and transmitting countries. The first LNG import project, approved in early 2000, is expected to require an investment of \$500 million for a terminal in Shenzhen and a 400-kilometer pipeline through Guangdong province. Possible LNG producers include Australia, Indonesia, Malaysia, and Qatar. Though less likely, there has also been speculation that a second terminal might be built near Shanghai. Nonetheless, “[t]he decision to go ahead with LNG is a major step forward in reducing dependence on coal, which still accounts for over 70% of energy output and is highly polluting.” While natural gas constituted only 2.8 percent of China’s energy consumption in 1999, it is anticipated to grow to about 8 percent in 2010.⁸

But to gain access to these and other new energy resources, China need not use force. Rather, Beijing has already embarked on a number of promising projects to encourage foreign investment in Chinese oil and natural gas fields, create Chinese oil companies that can compete on an international scale, and increase Chinese direct investment in energy resources abroad.

Foreign Investment in Chinese Energy

By the early 1980s, Beijing understood that it lacked the necessary capital to develop its offshore energy resources. At the time, it also lacked the equipment and technical skills to drill in even moderately deep waters. Consequently, China permitted foreign oil companies to acquire and develop offshore blocks in order to unlock new energy deposits and gain access to better technology and skills. Initial Chinese interest in offshore exploration began in the 1960s after the discovery of the Daqing fields along the coast of the Bohai Gulf and the Shengli fields near the mouth of the Yellow River. However, China’s attention was not focused on its undersea potential until the late 1970s, when “onshore production was peaking, world oil prices were rising and China’s own limited effort at offshore exploration was meeting with little success.”⁹

China’s first round of offshore licensing occurred in 1982. Five such rounds were held by October 1998 and a sixth one had been planned. But the China National Offshore Oil Corporation (CNOOC), which administers the offshore blocks, has generally licensed acreage through bilateral negotiation, granting an average of six licenses per year during the 1990s. Like most production-sharing contracts with foreign oil companies, those crafted by CNOOC included terms that allowed it to acquire an interest in exploration

⁸ Quotation from *Country Report: China and Mongolia, 1st Quarter 2000*, p. 30. See also Xu Yihe, “Status of East China LNG Projects Uncertain—Official,” *Dow Jones Newswires*, Mar. 27, 2000; and Jeffery Logan and William Chandler, “Natural Gas Gains Momentum,” *China Business Review*, July–Aug. 1998, pp. 40–44.

⁹ Wood Mackenzie Consultants Limited, *China* ([Edinburgh, U.K.: Wood Mackenzie] May 1999), p. 4.

fields if enough oil or natural gas were discovered to make development viable (see Tables 1 and 2).

Among the most successful early exploration projects was Yacheng, about ninety kilometers south of Hainan Island. There, after four years of negotiation, ARCO was awarded Block 50/35 in September 1982. Four months later, ARCO drilled the first of seven exploration wells on the Yacheng 13-1 geological structure and found a large natural gas deposit. While exploration continued for ten more years, the nearby structures revealed no further significant discoveries. In June 1994, development drilling began and Yacheng 13-1 produced a steady flow of 330 million cubic feet of natural gas per day—50 million of which was transported to Hainan through a 90-kilometer, 14-inch undersea pipeline. The rest was pumped through a 480-kilometer, 28-inch pipeline, completed in 1997, to the Black Point Power Station in Hong Kong. Considering the pipeline's total capacity of 700 million cubic feet per day, a subsequent arrangement was made in 1999 for Yacheng 13-1 to provide natural gas to a new power plant in Shenzhen, which would be jointly built by Exxon and China Power and Light.¹⁰

Exploration continues around Yacheng. In October 1997, ARCO and CNOOC agreed jointly to study the potential development of the Ledong gas field. "The Yacheng 13-1 pipeline infrastructure will play a critical role in determining the commerciality of the Ledong gas fields," commented one ARCO executive. "If development proceeds, the project will enable CNOOC and ARCO to build additional value in the South China Sea and supply cleaner-burning natural gas for the energy growth needs of southern China." Learning of the Ledong project, Vietnam objected to the exploration because part of the field encroached on its territorial waters. Undeterred, a year later, the two companies signed a second agreement to study the Wencheng area, west of Hainan.¹¹

Another area of intense foreign activity has been the Pearl River Basin, where three exploration areas (Xijiang, Huizhou, and Liuhua) lie close together. In the Xijiang area, Phillips Petroleum was awarded contracts for Blocks 15/11 and 15/22 in the first and second offshore licensing rounds, respectively. In 1991, Agip and Texaco farmed into the 15/22 block, and six years later four oil rigs were installed and wells drilled to produce about 104,000 barrels of oil per day, a figure that had fallen to 62,000 barrels by late 2000. Royal Dutch/Shell also made a discovery on an adjacent acreage. In December 1983, Huizhou was awarded to a consortium called the ACT

¹⁰ China Power and Light and Exxon are the two shareholders of Castle Peak Power Company, which owns Black Point Power Station. *Ibid.*, pp. 199–210; and "ARCO, Chinese Leaders Celebrate Startup of China's Largest Offshore Natural Gas Project," BP Amoco press release, Jan. 10, 1996.

¹¹ Quotation from "ARCO, CNOOC Expand Cooperation Agreement for Development of Gas Fields in South China Seas," BP Amoco press release, June 9, 1998. See also "China Rejects Vietnam's Protests in Maritime Dispute," *Agence France-Presse*, Nov. 24, 1997; and "ARCO, CNOOC Sign Cooperation Agreement for Development of Ledong Gas Fields in South China Sea," BP Amoco press release, Oct. 20, 1997.

Table 1 Chinese Oil Production (thousands of barrels per day)

Basin or Field	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Onshore</i>										
Anhui	—	—	0.8	0.9	1.0	1.6	1.8	1.6	1.8	1.5
Henan	48.3	43.2	42.9	41.3	38.6	38.0	37.3	37.2	33.0	25.0
Jianghan	14.6	15.2	16.3	17.5	17.1	17.4	16.5	15.1	12.7	11.3
Jiuquan	10.5	10.0	9.1	8.7	8.7	8.7	8.1	8.0	8.1	7.8
Junggar	140.0	146.0	153.0	159.1	159.1	167.2	175.2	174.2	177.0	182.0
North China Basin										
Dagang	76.0	78.0	81.6	85.6	86.6	87.4	87.6	86.0	85.5	85.0
Huabei	98.6	94.7	92.6	93.4	93.8	94.1	94.3	94.6	94.0	90.0
Jidong	6.8	7.8	8.7	9.3	10.3	11.5	12.3	12.8	11.0	9.0
Liaohe	270.2	267.9	285.9	302.5	312.6	302.9	302.8	290.4	301.1	299.0
Shengli	652.6	650.9	658.4	622.2	604.1	586.3	564.1	564.2	535.0	520.0
Zhongyuan	127.0	121.0	110.7	97.3	82.6	80.6	80.9	80.0	76.0	72.0
Ordos Basin										
Changqing	36.7	43.7	36.2	39.5	44.3	55.4	66.5	80.0	85.0	90.0
Yanchang	—	—	11.5	12.7	14.8	17.7	21.6	32.5	35.0	34.0
Qaidam	17.2	21.0	21.7	22.8	24.5	28.2	32.3	35.2	38.0	44.0
Sichuan	2.7	2.9	3.1	3.2	3.4	4.3	4.7	4.4	4.3	4.1
Songliao Basin										
Daqing	1113.0	1113.0	1125.7	1127.8	1127.8	1127.8	1127.9	1114.1	1090.0	1060.0
Jilin	69.0	69.0	67.5	66.5	68.5	74.5	80.6	79.4	67.0	58.0
Subei	17.9	18.1	17.3	18.5	20.4	21.6	23.6	25.2	24.0	23.0
Tarim	12.0	19.0	32.2	39.3	51.0	62.5	84.6	77.0	85.0	90.0
Turpan-Hami	—	—	23.2	28.5	44.5	58.8	60.4	59.0	65.0	70.0
Others	15.6	15.6	15.6	15.3	14.3	15.0	13.4	18.2	20.0	20.0
<i>Offshore</i>										
428W	0.8	0.7	0.7	0.6	0.5	0.4	0.3	0.2	—	—
Boxi	—	—	—	—	—	—	4.2	12.5	11.6	10.2
Bozhong	13.0	11.3	10.2	9.2	6.2	4.5	4.8	6.5	6.5	6.5
Caofedian	—	—	—	—	0.4	5.5	4.7	3.9	3.2	2.4
Chengbei	7.4	7.8	7.2	6.8	6.0	5.8	5.7	5.0	4.2	3.4
Huizhou	24.0	57.0	57.0	58.0	64.0	95.0	94.0	83.0	89.0	82.0
Jinzhou	—	0.3	1.8	1.8	3.2	2.4	2.3	1.8	4.5	16.5
Liuhoa	—	—	—	—	—	45.6	43.9	28.0	24.0	19.0
Lufeng	—	—	2.3	16.4	13.4	18.7	15.5	50.7	32.9	18.2
Pinghu	—	—	—	—	—	—	—	2.0	2.0	3.0
Suizhong	—	—	2.2	12.8	20.7	27.2	28.9	40.0	32.0	50.0
Weizhou	3.0	3.0	12.3	23.4	20.1	20.2	23.3	17.3	20.6	35.4
Xijiang	—	—	0.0	1.0	39.0	87.0	105.0	83.0	70.0	62.0
Yacheng	—	—	—	—	—	0.5	1.1	1.3	2.0	2.0

Note: The 2000 statistics were annualized from the information for the first six months of the year.

Sources: BP Amoco, *Statistical Review of World Energy*, June 2000; Wood Mackenzie, *China*, May 1999, pp. 16–17.

Table 2 Chinese Natural Gas Production (millions of cubic feet per day)

Basin or Field	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Onshore</i>										
Henan	4.0	4.0	3.9	3.8	3.5	3.2	3.1	2.9	2.5	2.0
Jianghan	7.0	8.0	8.0	7.5	7.4	6.9	6.4	7.9	8.0	7.5
Jiuquan	6.0	3.0	1.3	1.2	1.2	1.1	1.1	1.1	1.0	0.9
Junggar	65.3	81.3	81.6	80.3	85.4	101.7	120.4	129.5	135.0	140.0
North China Basin										
Dagang	35.0	36.0	34.0	39.0	37.0	37.0	38.0	34.0	35.0	35.0
Huabei	29.0	28.0	26.0	29.0	30.0	33.0	32.0	30.0	31.0	29.0
Jidong	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0
Liaohé	171.0	171.0	170.0	170.0	170.0	154.0	150.0	116.0	150.0	200.0
Shengli	139.0	140.0	133.0	127.0	124.0	115.0	97.0	89.0	85.0	77.0
Zhongyuan	123.0	118.0	111.0	116.0	107.0	107.0	112.0	115.0	110.0	110.0
Ordos	5.0	5.0	5.3	7.5	9.7	10.0	16.0	44.5	75.0	110.0
Qaidam	7.0	5.0	4.4	6.5	6.2	12.3	21.3	25.9	37.0	47.0
Sichuan	608.0	620.0	652.0	684.0	690.0	714.0	726.0	728.0	755.0	775.0
Songliao Basin										
Daqing	220.0	221.0	215.5	224.5	221.5	224.6	226.4	225.4	220.0	220.0
Jilin	13.0	16.0	19.8	18.0	17.7	19.8	22.3	20.5	17.0	14.0
Subei	4.0	3.0	2.6	2.2	1.8	1.5	1.2	1.6	1.5	1.2
Tarim	2.0	2.0	2.0	7.0	14.0	13.0	18.0	25.0	50.0	135.0
Turpan-Hami	—	—	9.0	7.4	11.8	22.2	58.2	63.8	65.0	65.0
Others	—	4.0	10.8	15.6	17.4	11.7	9.4	8.4	8.0	9.0
<i>Offshore</i>										
Boxi	—	—	—	—	—	—	6.0	10.0	10.0	10.0
Jinzhou	—	25.0	28.0	37.0	36.0	36.0	37.0	48.0	48.0	48.0
Pinghu	—	—	—	—	—	—	—	—	28.0	42.0
Yacheng	—	—	—	—	—	206.0	334.0	317.0	330.0	330.0

Note: The 2000 statistics were annualized from the information for the first six months of the year.

Sources: BP Amoco, *Statistical Review of World Energy*, June 2000; Wood Mackenzie, *China*, May 1999, pp. 21–22.

Operators Group, which included Agip, Chevron, and Texaco. About 160 kilometers southeast of Hong Kong, the block yielded its first significant discovery two years later. Altogether, the wells on the block were estimated to have peaked around 95,000 barrels per day in 1996 and have since declined to 82,000. Meanwhile, Amoco licensed much of the Linhua area in November 1985, and in January 1994, Kerr McGee acquired half of Amoco's interest. The first well was spudded in late 1986, and by the time full-scale development began in October 1994, twelve wells had been drilled. Two years later, the field produced 45,600 barrels per day, but now only 19,000.¹²

By the 1990s, foreign interest in Chinese offshore blocks had largely shifted to the Bohai Gulf, where the Boxi, Bozhong, Caofedian, Chengbei, Jinzhou, and Suizhong exploration areas are located. Because Beijing care-

¹² Wood Mackenzie, *China*, pp. 87–100, 115–26, 185–98.

fully guarded these potentially prolific areas during much of the preceding decade, CNOOC dominates most oil and natural gas production there through its subsidiary, Bohai Oil Corporation. The only significant foreign production stake was in Bozhong, where a consortium of several Japanese firms led by Japan National Oil Corporation signed a production-sharing contract in May 1980. Development began nine years later and the field produced a meager 4,000 barrels of oil per day, peaking in 1991 at 13,000.¹³

Despite joint interests in many blocks in the Bohai Gulf, few large foreign oil companies have found economically viable energy deposits. Among those that have is Phillips Petroleum, which found a sizable deposit in the Penglai 19-3 geological structure on its 11/05 block in June 1999. The deposit was estimated to hold 60 million cubic meters of recoverable oil in November 1999. In general, although only small oil companies have been able to commercialize their discoveries, foreign interest has not abated. Agip, Chevron, ExxonMobil, and others continue to pressure Beijing to open additional acreage. In September 1998, ARCO and Texaco concluded a production-sharing contract with CNOOC to develop the shallow-water Qinhuangdao 32-6 field. Explored by CNOOC in 1995, the field is expected to produce at a sustainable rate of 60,000 barrels per day by 2002.¹⁴

Foreign interest in exploration and production in China has not been limited to offshore fields, but Chinese officials generally denied foreign oil companies access to onshore acreage until 1986, when the China National Petroleum Corporation (CNPC) auctioned several blocks in China's eleven southern provinces. Unfortunately, the blocks held such poor prospects that few companies chose to bid. However, by early 1993, Beijing had become increasingly concerned that China's energy demand was outstripping its supply. As a result, the Chinese government allowed foreign companies to attempt to revive declining onshore fields with their enhanced oil recovery techniques and search for new reserves. Western firms quickly rose to the challenge, and at least sixty-eight companies bid in the first onshore licensing round. Since 1986, thirty-seven onshore production-sharing contracts worth over \$1 billion have been signed.

Meanwhile, in Xinjiang's Tarim Basin, CNPC's exploration efforts had begun to pay off, particularly along the basin's northern rim. In October 1984, a discovery well found good oil flows in the Yakela field. In September 1987, another located oil and natural gas under the Lunnan field, about 100 kilometers west of Korla. In 1994, a larger oil and natural gas discovery was made in the Yaha field. But it was the October 1989 discovery of the Tazhong field, some 400 kilometers south of Korla, that really spurred hopes of vast energy reserves in China's far west. While some in Beijing considered imme-

¹³ Ibid., pp. 57–66.

¹⁴ "China's Biggest Offshore Oilfield Discovered," *Asia Pulse*, Nov. 3, 1999; and "ARCO/Texaco Sign Contract with CNOOC to Develop China's Second Largest Offshore Oil Field," BP Amoco press release, Sept. 18, 1998.

diately opening the basin to foreign exploration, CNPC convinced Beijing to delay its plans. Soon after, CNPC dispatched 100,000 workers to Xinjiang to “fight the Big Battle for oil in Tarim.” The discovery well had been drilled to a depth of 6,000 meters and yielded a flow of 3,620 barrels of oil and 12 million cubic feet of natural gas per day. By March 1997, thirty-five wells had been spudded. Speculation abounded that the basin could hold 300 million tons of oil, but by the late 1990s, even the most optimistic Chinese numbers had been revised downward, some to as low as 30 million tons. In any case, exploration in the Taklimakan Desert proved too expensive for CNPC to bear by itself. Gathering seismic data alone cost ten times what it would on conventional terrain. Moreover, the great depths of the oil and natural gas deposits meant that each exploration well would cost as much as \$20 million.¹⁵

CNPC conceded that foreign oil companies would be useful to supplement Chinese exploration, but limited foreign participation to the unexplored blocks on the basin’s southern and western rims. Nonetheless, many foreign companies remained optimistic because, even if new energy reserves were not discovered, an early entry into the region could provide the technical information and business relationships needed to acquire more attractive blocks later.¹⁶

During the first onshore licensing round, the Tarim Basin hosted a number of foreign oil companies. In February 1994, a consortium that included Agip, Elf Aquitaine, Japan Energy, Japex, and Texaco signed the first production-sharing contract for Block 1. But after drilling its first wildcat well as deep as 4,900 meters, it declared the hole dry and plugged it. CNPC leased Block 4 to BP Amoco, which, after performing some minor seismic tests, relinquished it in 1996. An Exxon-led joint venture secured the license to Block 3, but after meeting its commitment to drill two wells and perform some seismic work, relinquished it in 1998.¹⁷

In its third onshore licensing round, CNPC awarded Agip and Texaco the T6 and T7 blocks in February and August 1996, respectively. Exxon obtained the licenses to Blocks T12 and T13 near Aksu in March of that year. A year later, a consortium of four Japanese firms signed a production-sharing contract with CNPC for the Misalieyi block, which marked the first time

Foreign companies accepted meager opportunities in hopes of future benefits.

¹⁵ Quotation from James McGregor, “China Opens Last Frontier to Foreign Oil Companies,” *Wall Street Journal*, Feb. 22, 1993. See also Wood Mackenzie, *China*, pp. 325–37.

¹⁶ Foreign oil companies also had trouble obtaining geophysical data from earlier Chinese seismic surveys and exploratory drilling, and paid as much as \$1.6 million for the data that could be found. Ahmed Rashid and Trish Saywell, “Beijing Gusher,” *Far Eastern Economic Review*, Feb. 26, 1998, pp. 46–48; and Marcus W. Brauchli, “China’s Growing Thirst for Oil Clears the Way for Foreign Firms, but Spurs New Headaches,” *Asian Wall Street Journal*, Sept. 20, 1993.

¹⁷ Wood Mackenzie, *China*, pp. 325–37.

foreign oil companies had been permitted to develop acreage near the Tazhong field in the middle of the Tarim Basin. Unfortunately for these investors, little headway has been made in exploration on any of their licensed blocks.¹⁸

At the same time, Chinese oil companies exploring on more attractive geological structures have discovered some new reserves, though still not as large as originally hoped. In March 2000, China National Star Petroleum Corporation (CNSPC) reported that it had located some 140 million tons of oil reserves on the Tahe field along the basin's northern rim and hoped that more exploration would find an additional 360 million tons over the next three years.¹⁹

For any discovery in the Tarim Basin to be viable, however, the oil and natural gas would have to be transported to distant markets. At first, the oil from Tazhong was trucked to the railhead at Korla and then shipped by railroad to Urumqi and the rest of China. This expensive process was limited to 65,000 barrels of oil per day by the maximum capacity of the railroad connecting Korla and Urumqi. A 24-inch pipeline was laid between Korla and Shanshan that increased the throughput to 100,000 barrels per day. In July 1996, a 305-kilometer pipeline began transporting some 63,000 barrels per day from Tazhong to the Lunnan field, where more oil was added, and the combined total was then piped to Korla. A separate 192-kilometer, 18-inch gas pipeline came online in 1998 and carries about 245 million cubic feet of natural gas per day from Lunnan to a petrochemical plant in Korla.²⁰

Even with the Korla-Shanshan pipeline, however, the oil still must be loaded onto railcars for its final journey to refineries and distribution points in eastern China. As early as 1993, CNPC hoped to build a 4,200-kilometer gas pipeline across China, linking the Tarim Basin to Shanghai, as part of China's new emphasis on that cleaner-burning fuel. As envisioned by Beijing in early 2000, the first segment of the pipeline would extend 1,500 kilometers from Shanghai to the Changqing gas fields in Shaanxi province. The second and more ambitious part would connect the first segment with a 2,700-kilometer pipeline from the Tarim Basin. But for such a long pipeline to be economically viable, it would have to carry a substantial amount of natural gas, which would require not only a large supply but also a large demand.²¹

Initially, CNPC chairman Wang Tao boasted that China could pay for the whole pipeline itself—with the qualification that “of course, if there's a possibility, we also hope we can use foreign capital.” But by the late 1990s, Chinese attempts to attract foreign investment for the pipeline had become

¹⁸ The Japanese companies were Japan Energy, Japex, Sumitomo, and Inpex. *Ibid.*

¹⁹ Xu Yihe, “China CNSPC Proves 140MMT Crude Reserve at Tarim Prospect,” *Dow Jones Newswires*, Mar. 22, 2000.

²⁰ “China Launches Massive Gas Pipeline Campaign,” *Oil and Gas Journal*, June 5, 2000, pp. 63–66.

²¹ The estimated cost for China's 4,200-km pipeline varies between \$8 billion and \$14 billion. *Ibid.*; and Brauchli, “China's Growing Thirst for Oil.”

more intense, and in March 2000 Beijing allowed foreign investors to take a 100 percent interest in the pipeline. Yet foreigners have shied away from the expensive project out of fears that “estimates of future natural gas demand in the Shanghai area are overly optimistic,” especially in light of competition from the Pinghu offshore field and possible LNG projects.²²

Confusion and conflicts among Shanghai’s various utilities, agencies, and financial institutions have indeed limited the demand for the pipeline’s natural gas. A State Development Planning Commission official even admitted that “the status of the downstream projects is unclear.” As a result, while initial construction on the pipeline is slated to be complete by 2003, the proposed annual throughput for the pipeline has been reduced from 12 billion cubic meters to just 4 billion. Downstream problems have become so severe that Chinese officials have lifted their ban on foreign ownership of gas-fired power plants, gas-fueled chemical plants, and urban gas pipeline networks. BP Amoco then signed a gas marketing agreement with PetroChina in September 2000.²³

Beijing appears intent on proceeding with the pipeline even without significant foreign investment. According to one Chinese official, the pipeline remains “one of [China’s] top priorities.” The government hopes that the spending associated with the project will promote economic development in China’s interior and tie restive Xinjiang economically closer to the rest of the country. Unsurprisingly, as one PetroChina official commented, some foreign companies have seen the pipeline “more as a political project.”²⁴

Despite general disappointment in the Tarim Basin, foreign oil companies remained eager for energy prospects in the Sichuan, North China, and Songliao Basins, although foreign participation before 1994 had been minimal. However, given the large natural gas reserves of these areas, several companies have since signed production-sharing contracts to begin exploration. Anadarko and the Ministry of Geology and Mineral Resources led two joint studies of the Longmenshan and Tong Nan Ba blocks in October 1994. Eventually Royal Dutch/Shell farmed into the project with a 60 percent

²² While foreign companies can own 100 percent of the pipeline, they cannot own the land on which the pipeline rests and they must use CNPC’s construction crews. Once fully operational in 2007, the pipeline is expected to carry some 20 billion cubic meters of natural gas each year. Quotation from Xu Yihe, “China Energy Watch: Investors Avoiding Gas Pipeline Plan,” *Dow Jones Newswires*, Oct. 10, 2000. See also Xu Yihe, “Foreign Cos Allowed 100% of China’s W-E Gas Pipeline,” *Dow Jones Newswires*, Mar. 27, 2000.

²³ Demand remains a significant hurdle, considering an 864-kilometer gas pipeline built between the Changqing gas field and Beijing has been operating at 30 percent of capacity due to a lack of demand. Quotation from Xu Yihe, “China Scales Dn Initial Shanghai Gas Pipeline Throughput,” *Dow Jones Newswires*, Apr. 25, 2000. See also “BP Signing Chinese Gas Accord, May Join Gas Pipeline,” *Oil and Gas Journal*, Sept. 18, 2000, p. 74; “PetroChina Unveils Plan to Cut 10% of Its Work Force over Five Years,” *Wall Street Journal*, Sept. 1, 2000; *Country Report: China and Mongolia, May 2000* (London: EIU, 2000), p. 34; Gabriel Lafitte, “Problems with the Pipeline,” *Dow Jones Newswires*, Apr. 6, 2000; and Xu, “Foreign Cos Allowed 100% Of China’s W-E Gas Pipeline.”

²⁴ Quotation from Xu, “China Energy Watch.” See also “Go West, Young Han,” *Economist*, Dec. 21, 2000; Craig S. Smith, “Beijing Tries to Lift Economic Standards,” *New York Times*, Nov. 7, 2000; and Philip P. Pan, “Touting China’s Hinterland,” *Washington Post*, Oct. 26, 2000.

interest, but at the end of the study in 1995 did not sign a contract. In December 1995, Texaco licensed two blocks in the western part of the basin, and Enron took the Chuangzhong block in August 1997. Two years later, the company signed a letter of intent with CNPC to construct a 695-kilometer, 26-inch gas pipeline from Sichuan to neighboring Hubei province. The \$230 million pipeline with an annual capacity of 3 billion cubic meters was sanctioned in Beijing's Tenth Five-Year Plan and is part of China's larger ambition to build a national gas transmission grid. Foreign interest in central China has not been limited to natural gas, but has extended to coalbed methane in the Hedong and Ordos Basins, where ARCO, Phillips Petroleum, and Texaco have acquired interests in several blocks.²⁵

Another onshore area with notable foreign activity is the North China Basin, which extends through Henan and Hebei provinces. After a lackluster second licensing round in January 1994, in which only two of the basin's eleven blocks offered were awarded, CNPC began bilateral negotiations with foreign companies such as Agip, Chevron, Royal Dutch/Shell, and Texaco, as well as several smaller firms. Yet many of the American and Canadian independents involved have been contracted to perform enhanced oil recovery in aging and poorly managed fields rather than embark on new exploration.

North of the North China Basin is the Songliao Basin, which encompasses the Daqing fields. In April 1995, Exxon signed a production-sharing contract covering some 30,000 square kilometers and giving the company the right to explore and develop deep horizons within the basin. A Canadian independent, Sunwing Energy, is involved in a joint development deal with Lianyi Petrochemical to develop the Fularji field in the Daqing area. With an estimated reserve of 35 million barrels of oil, the field is reported to require scores of wells. In August 1996, Sunwing was awarded a thirty-three-square-kilometer site that sits on a difficult low-permeability reservoir in one of Daqing's fields. The contract marked the first time CNPC had given a foreign company rights to undeveloped resources in its largest oil production area.

The range of foreign investment in China has also extended into downstream operations. In one case a PetroChina subsidiary, Daqing Petrochemical Corporation, invited BP Amoco to help expand its main ethylene cracker's capacity from 480,000 tons to 600,000 tons per year in October 2000.

²⁵ The Sichuan Basin contains some of the oldest known natural gas deposits in China. In ancient times, natural gas would be collected in animal bladders from ground seeps and used for lighting. Since the 1960s, CNPC has built and operated a number of gas pipelines throughout the region. Xu Yihe, "China Approves Enron, PetroChina Gas Pipeline Proj—Exec," *Dow Jones Newswires*, Aug. 21, 2000; "China Outlines 10 Projs to Spur Growth in W. Central China," *Dow Jones Newswires*, Apr. 11, 2000; *Country Report: China and Mongolia, 1st Quarter 1999* (London: EIU, 1999), pp. 21–22; "Production-Sharing Contracts Signed by ARCO for Coalbed Methane Project in China," BP Amoco press release, June 29, 1998; "Texaco Signs 500 Million Dlr Coal-Gas Exploitation Agreement in China," Agence France-Presse, Jan. 8, 1998; *Country Report: China and Mongolia, 1st Quarter 1998* (London: EIU, 1998), p. 21; and "ARCO Acquires Enron Oil and Gas Company's Interest in Two Coalbed Methane Prospects in China," BP Amoco press release, June 3, 1997.

At the same time, BP Amoco was involved in the planning and construction of a 900,000-ton-per-year ethylene cracker in Shanghai with Sinopec. In its twentieth and largest joint venture in China to date, Royal Dutch/Shell partnered with CNOOC to begin construction of a \$4 billion ethylene cracker in Huizhou in late 2000. Once completed, that world-class plant will have an annual capacity of almost 3 million metric tons of ethylene derivatives.²⁶

However, downstream operations have also carried risks for foreign investors. In April 2000, two Royal Dutch/Shell joint ventures involved in the distribution of liquefied petroleum gas in China defaulted on \$16 million in loans from ING Bank. Even though Royal Dutch/Shell once held stakes of 90 percent and 45 percent in the two ventures, the Anglo-Dutch company contended that since it already negotiated to divest both firms, the ventures' debt obligations remained with the firms. But the entire issue underscored "that emerging-market risk doesn't stem exclusively from local borrowers. [Since 1998], there have been several cases in which multinationals have disavowed responsibility for loans to joint ventures where they haven't provided legal promises to repay."²⁷

The Creation of China's Oil Majors

Beyond encouraging major foreign oil companies to invest in China, Beijing has endeavored to create its own international, publicly held "majors." The goal is to relieve the government of the financial burden of state-owned enterprises and foster firms able to compete with foreign oil companies for energy resources in China and abroad.

PetroChina. Two armed soldiers still stand guard at the main entrance to the corporate offices of PetroChina, China's first publicly held oil company. The offices themselves remain housed in the same building that accommodates its former state-owned parent, CNPC. Although the decor has yet to change, the Chinese oil industry has experienced dramatic changes over the last decade, spurred on by the fear, as the official *China Daily Business Weekly* reports, that it "may not be too long before the [oil] industry collapses in the face of foreign competition, if reforms do not gather pace." Citing an internal government report, the newspaper further argued that "China needs the invisible helping hand of the market to save its oil industry, which is plagued by administrative monopoly and a divided internal structure." West-

²⁶ Cracking is a process in which heat and pressure (and sometimes a catalyst) are applied to heavier hydrocarbons to break them into lighter ones, such as ethylene. "China Asks BP to Join Daqing Ethylene Cracker Proj—Exec," *Dow Jones Newswires*, Oct. 31, 2000; "Shell Signs Agreement to Take 50% Stake in Venture with Chinese Oil Companies," Associated Press, Oct. 29, 2000; and Bhushan Bahree, "Shell, Chinese Joint Venture Partners Reach Agreement on Huizhou Plant," *Wall Street Journal*, Aug. 24, 2000.

²⁷ Henny Sender, "Two Shell Joint Ventures in China Default on Loans, Worrying Banks," *Wall Street Journal*, Apr. 13, 2000.

ern firms, it stated, have an advantage because they are “independent of government meddling.”²⁸

But to create viable businesses, Chinese oil concerns will have to curtail their operating expenses sharply. The cost of oil development by Chinese firms averages \$1.50 per barrel, compared to \$1.20 for their Western counterparts. The cost of natural gas exploration by Chinese firms averages \$3.90 per barrel of oil equivalent, compared to \$3.00 for their Western counterparts. Furthermore, most Chinese refineries operate at a scale below what is needed to compensate for the high cost of maintaining them. While ExxonMobil’s refineries worldwide average 8.9 million tons of oil per year and those in Singapore 15.3 million tons, many Chinese refineries have capacities as low as 3 million tons. To improve their profitability, Sinopec and China National Chemicals Import and Export Corporation, two large Chinese downstream firms, have tried to attract foreign clients to achieve higher refinery utilization rates. But that was not enough at the end of 2000. As a result of continued oil-product surpluses across China, a number of PetroChina and Sinopec refineries had to lower their run rates, some by as much as 20 percent. Others have begun their annual maintenance programs early.²⁹

Beginning in the 1980s, Beijing began a large-scale restructuring of the country’s oil industry, merging and allocating smaller oil and petrochemical companies to create a few large integrated oil concerns. In November 1999, CNPC formed a subsidiary called PetroChina and entrusted it with 480,000 of the parent company’s 1.5 million workers and most of its best assets. Although PetroChina was primarily an onshore exploration and production company like its parent, it immediately ranked fifth in the world in terms of estimated reserves, and its production accounted for 68 percent of China’s total at the time of its initial public offering (IPO) in April 2000. The company also operated 3,400 gas stations and owned pipelines that transported 84 percent of China’s natural gas. Meanwhile, CNPC retained the excess workforce and most of its welfare obligations.³⁰

To ready the firm for its launch, PetroChina hired over a thousand McKinsey and PriceWaterhouseCoopers management consultants to help streamline its units. Goldman Sachs was engaged as the lead underwriter to manage the firm’s road show and IPO. PetroChina’s executives promised foreign investors that they would improve profitability by reducing staff and cutting costs. By January 2001, 38,000 employees had been laid off and a

²⁸ “Chinese Oil Industry Will Collapse without Reform, Report Says,” Agence France-Presse, Jan. 25, 1998.

²⁹ Xu Yihe, “China Refineries Continue to Lower Runs on High Stks—Exec,” *Dow Jones Newswires*, Dec. 14, 2000; Xu Yihe, “China Needs New Changes for Globally Viable Oil Sector,” *Wall Street Journal*, Apr. 20, 2000; and Brauchli, “China’s Growing Thirst for Oil.”

³⁰ Ian Johnson, “PetroChina Privatization Progresses with Investments, London Lawyers,” *Wall Street Journal*, May 31, 2000; Michael M. Phillips, “PetroChina’s IPO Roadshow Opens, While Opposition Forces Rally Nearby,” *Wall Street Journal*, Mar. 23, 2000; and “PetroChina Plans to Move Forward with Roadshow for Initial Offering,” *Wall Street Journal*, Mar. 3, 2000.

number of small refineries were closed—saving the company \$84.5 million annually. In five years, PetroChina will have shed 10–12 percent of its personnel. By that time, the company also intends to have trimmed its natural gas development cost to \$3.50 per barrel of oil equivalent. The company's revenue growth will come from continued exploration and production of new energy resources in China and abroad as well as an aggressive expansion of its retail operations. In fact, PetroChina has aimed to control one-fifth of all Chinese gas stations and acquired 2,800 of them during the first six months of 2000 alone.³¹

But among PetroChina's most critical projects are the development of natural gas in Xinjiang and the construction of a pipeline to convey it to urban markets in eastern China. Eventually, PetroChina hopes to locate in Xinjiang's three basins about 1 trillion cubic meters of natural gas—enough, according to most Chinese analysts, to make the planned pipeline economically feasible. With only 420 billion cubic meters discovered so far, the company has posited an ambitious schedule to add some 300 billion cubic meters in 2000 and another 100 billion in 2001. Straining to meet those goals, PetroChina has been reportedly considering the tender of its Kela-2 gas acreage in the Tarim Basin to foreign exploration and production. Kela-2 is believed to be among the largest natural gas discoveries in the Tarim Basin and could yield 10 billion cubic meters of natural gas annually.³²

However, some foreign investors remain wary of PetroChina. Although it was to operate as a publicly held company after its offering, almost 90 percent of its stock remained in the hands of state-owned CNPC, raising fears that PetroChina could be locked into CNPC obligations. As Mark Mobius, manager of the Templeton Emerging Markets Fund, remarked: "The question is whether [PetroChina] can restructure. As long as the government continues to hold the reins of power it is hard to see change." The company also promised to give CNPC an undisclosed amount of money from its IPO to cover worker retirement and retraining and pay out a dividend of over \$1 billion, most of which would go to CNPC. Finally, PetroChina has committed to bearing most of CNPC's \$15 billion debt. As much as \$1.2 billion of its IPO proceeds were used to reduce its debt load. Whatever remained would be

³¹ Meredith Tompson, "PetroChina Slashes 38,000 Jobs in 2000," *BridgeNews*, Jan. 8, 2001; "PetroChina Says '00 Target for 10,000 Job Cuts Completed," *Dow Jones Newswires*, Nov. 1, 2000; "PetroChina to Merge Some Refineries, Close Others, Papers Say," *Bloomberg News*, Oct. 29, 2000; "PetroChina Aims to Control 21% of China's Gas Pumps," *Bloomberg News*, Aug. 31, 2000; Peter Wonacott, "PetroChina's Net Soared 77% in '99; Company Plans to Trim Payroll, Debt," *Wall Street Journal*, Apr. 28, 2000; and Peter Wonacott and Ian Johnson, "PetroChina Prepares to Go Public; Changes Fail to Break Its State Ties," *Wall Street Journal*, Jan. 14, 2000.

³² The pipeline's gas reserve requirement was based on the assumption that 72 percent of the natural gas discovered in the Tarim Basin would eventually be recovered. Vivian Chu, "PetroChina May Open Up West to West," *CBS.Market.Watch.com*, Dec. 12, 2000; Xu Yihe, "PetroChina Starts Ops at New Block in Xinjiang—Exec," *Dow Jones Newswires*, Dec. 11, 2000; Xu Yihe, "PetroChina to Build 1.06 Cu Meter Gas Capacity 01—Report," *Dow Jones Newswires*, Dec. 7, 2000; and Xu Yihe, "PetroChina Seeks 300B Cu Meters Proven Tarim Gas Reserves," *Dow Jones Newswires*, Mar. 31, 2000.

invested in existing fields, such as those in the Daqing area where the company hopes enhanced oil recovery equipment can extend the lives of its oil fields. Other new investments would be in natural gas, especially the fields in Shaanxi province.³³

A further complication arose when a broad range of environmental, labor, and human rights organizations rallied against PetroChina's IPO in protest of its parent company's activities in Sudan and Tibet. They were principally disturbed by reports that CNPC's oil development project in Sudan had used forced labor. Some were also upset because the project transfers some of its revenue to the regime in Khartoum, which is engaged in a protracted and bloody civil war. To assuage its detractors, PetroChina guaranteed that the Sudanese oil development project would remain in CNPC hands. "Sudan should not be an issue because of extensive legal firewalls in place to ensure the IPO proceeds are not used there," reassured Robert Hormats, a vice-president of Goldman Sachs International.³⁴

Despite such problems, PetroChina's initial float on the Hong Kong and New York stock exchanges was oversubscribed by a respectable 105 percent—helped no doubt by the company's promise to distribute 40–50 percent of its net profits as a dividend to its shareholders. About 17.6 billion class-H shares were issued, of which 879.1 million were offered in Hong Kong at a price of HK\$1.28 per share, at the low end of its expected HK\$1.23–1.49 range. In New York, Goldman Sachs ensured that all of PetroChina's American Depository Receipt (ADR) shares were placed in institutional hands by the time of the IPO and continued to fend off attempts by the company's critics to delay the offering. The ADR offering price was \$16.44, also at the low end of its expected range. As a result, PetroChina raised just \$2.9 billion, far short of the \$5–10 billion it had hoped for.³⁵

What modest success PetroChina's offering did have was largely the result of a strategic investment by BP Amoco, which acquired 20 percent of the worldwide float in hopes that PetroChina might give it access to China's

³³ PetroChina also arranged with its creditors to swap some of its remaining debt for equity in the publicly held company. Quotation from Jason Booth, "PetroChina Is No Longer Black Sheep of the Market," *Wall Street Journal*, June 5, 2000. See also Mark L. Clifford and Dexter Roberts, "Can This Giant Fly?" *Business Week*, Feb. 7, 2000; and Wonacott and Johnson, "PetroChina Prepares to Go Public."

³⁴ Quotation from Wonacott and Johnson, "PetroChina Prepares to Go Public." See also Eduardo Lachica, "AFL-CIO's Influence Erodes Interest in PetroChina's IPO," *Wall Street Journal*, Mar. 14, 2000; Eduardo Lachica and Michael M. Phillips, "U.S. Lawmakers Attempt to Block IPO for State-Owned Chinese Oil Company," *Wall Street Journal*, Mar. 1, 2000; Eduardo Lachica, "U.S. Lawmakers Oppose Plans by China Firm to Launch IPO," *Wall Street Journal*, Mar. 1, 2000; "The Initial Public Offering of PetroChina: A Report by the AFL-CIO's Office of Investment" ([Washington, D.C.]: AFL-CIO, Mar. 1, 2000); and Peter Wonacott and Eduardo Lachica, "Protests, Regulatory Review Hamper Planned Stock Listing of PetroChina," *Wall Street Journal*, Feb. 9, 2000.

³⁵ ADRs are negotiable receipts on foreign securities and are traded in place of those securities in order to alleviate the difficulties (including transferring certificates, converting currencies, and meeting financial disclosure requirements) inherent in buying and selling foreign securities. Bei Bei She, "China's CNOOC Seen Attractive at Second IPO Attempt," Reuters, Jan. 17, 2001; "China Company: Petro China Takes Off—Just," EIU, Apr. 7, 2000; and Peter Wonacott, "PetroChina IPO Is Critical to Revamping Oil Industry," *Wall Street Journal*, Apr. 6, 2000.

growing markets. Upstream, BP Amoco gained greater access to exploration acreage in China; downstream, the company opened a potential market for its natural gas fields in Siberia and Indonesia and created a joint venture with PetroChina to acquire 150 gas stations in southern China. In Hong Kong, PetroChina relied on several pro-Beijing firms to place all its shares there. The Henderson Land Development Company alone, led by Lee Shau-kee, purchased 53.3 percent of the total.³⁶

Sinopec. Six months after PetroChina's offering, a second Chinese oil company, Sinopec, prepared for its IPO. Formally established in 1983 as the China Petroleum and Chemical Corporation, it once managed 90 percent of China's refineries, including thirty-eight of the largest, as well as the domestic distribution of petrochemical products. Through the Chinese oil industry's restructuring in July 1998, Sinopec acquired several production fields, including the Shengli fields in Shandong province, and shed some of its smaller refineries. Nonetheless, the firm remained a heavily downstream operation. About sixty regional pipeline and petrochemical companies have been folded into its portfolio since 1997, including five with shares listed on the Hong Kong stock exchange and a dozen with shares listed on mainland Chinese stock exchanges. Operating over 20,000 gas stations in nineteen provinces, Sinopec continues to be the dominant oil-product retailer in southern and eastern China.³⁷

During its road show, foreign investors were relieved to learn that Sinopec intended to use most of its IPO proceeds to expand its business. The firm planned to grow by acquiring or building new refineries, petrochemical plants, and retail outlets as well as investing in exploration and production. It also hoped to improve its domestic distribution network consisting of pipelines and 1,100 bulk storage facilities. Finally, Sinopec was expected to shut several smaller refineries and cull 20 percent of its 500,000-person workforce by 2005, including 27,000 employees in 2001. All told, the company was slated to cut operation costs by \$265 million in 2001 and \$1.6 billion by 2003. In a separate arrangement with its creditors, Sinopec swapped \$3.6 billion of its debt for equity in the new publicly held company.³⁸

³⁶ Karol Nielsen, "PetroChina IPO Succeeds after a Difficult Start," *Chemical Week*, Aug. 30, 2000, p. 31; Kenneth Wong, "Initial PetroChina Trading Sputters; Goldman Sachs Bolsters Prospects," *Wall Street Journal*, Apr. 10, 2000; Peter Wonacott, "PetroChina Sells Hong Kong Portion of Its IPO," *Dow Jones Newswires*, Apr. 5, 2000; Bhushan Bahree, "BP Amoco Plans to Acquire 20% of PetroChina in Initial Offering," *Wall Street Journal*, Mar. 24, 2000; and Peter Wonacott and Eduardo Lachica, "PetroChina Recruits Several Allies in Hong Kong As Investors in Issue," *Wall Street Journal*, Mar. 22, 2000.

³⁷ In 2000, China had roughly 80,000 gas stations. "Sinopec to Spend \$3.8 Bil Buying Gas Stations, Paper Says," *Bloomberg News*, Nov. 18, 2000; Kirsti Hastings, "China's Sinopec to Raise US\$3-4B in Share Offer—Source," *Dow Jones Newswires*, Sept. 14, 2000; and Xu Yihe, "Sinopec's IPO May Outperform PetroChina; Majors Support," *Dow Jones Newswires*, Sept. 12, 2000.

³⁸ Zhang Honglin, "The Directors of the Company (As Defined below) Wishes [sic] to Clarify Press Articles on the Company's Employee Reduction Plan," Sinopec announcement, Jan. 8, 2001; "Asia Briefs," *Wall Street Journal*, Dec. 26, 2000; Mark Lander, "China's No. 2 Oil Company Prepares to Go Public," *New York Times*, Oct. 12, 2000;

However, none of Sinopec's foreign investors would have a seat on the company's board of directors, and further worries arose over the company's geographic situation. While Sinopec's refineries and distribution networks are largely based in southern China, the main energy production areas, such as Daqing and Shengli, are in the north. Consequently, Sinopec imports as much as 53 percent of the oil used in its southern refineries. But with prices for gasoline and diesel still fixed by Beijing, Sinopec's refining losses mounted as international oil prices rose in 1999. Sensitive to the plight of its refiners, Beijing raised the price of gasoline by 27 percent and diesel by 24 percent in July 1999. Within the next year, the price of gasoline increased by another 42 percent, and a new fuel tax was levied on wholesalers in October 2000. Even so, Beijing has been wary of raising fuel prices, since doing so eventually accelerates inflation and retards economic growth. As a result, the Chinese government slightly reduced domestic prices after international oil prices eased in late 2000. In any case, it was clear that Sinopec's profitability would be somewhat tied to policies set by Beijing.³⁹

Fortunately for the firm, its activities are not limited to downstream operations. Its upstream designs include new exploration in the Shengli fields, the Tarim Basin, and the East China Sea. By the end of 1999, Sinopec had proved 2.9 billion barrels of oil reserves and 782 billion cubic feet of natural gas reserves. Another 809 million barrels of recoverable oil and 10.2 million cubic feet of recoverable natural gas were discovered during the first nine months of 2000.⁴⁰

Like PetroChina's, Sinopec's public offering also met resistance from environmental, labor, and human rights organizations when they learned that one of Sinopec's subsidiaries, Zhongyuan Petroleum Corporation, was contracted by CNPC to undertake seismic surveys and drill wells in Sudan. To reduce the intensity of further protests on the eve of its IPO, Sinopec sold the subsidiary to CNPC in June 2000.⁴¹

The apparent success of BP Amoco's investment in PetroChina helped Sinopec attract a number of strategic investors for its offering. Exxon-

"Overhaul to Cost 100,000 Jobs," *Bloomberg News*, Sept. 26, 2000; Hastings, "Sinopec to Raise US\$3–4B"; and "Chinese Banks Swap \$3.6 Bil Debt for Sinopec Equity," *Bloomberg News*, Sept. 14, 2000.

³⁹ "China Cuts Gasoline Prices As Crude Prices Fall, Xinhua Says," *Bloomberg News*, Nov. 17, 2000; *Country Report: China and Mongolia, August 2000* (London: EIU, 2000), p. 23; Xu Yihe, "China's 2005 Crude Run Expected at 230M MT—Exec," *Dow Jones Newswires*, Mar. 24, 2000; *Country Report: China and Mongolia, 1st Quarter 2000*, p. 30; *Country Report: China and Mongolia, 2nd Quarter 1999*, p. 31; *Country Profile: China and Mongolia, 1998–99* (London: EIU, 1999), p. 27; "China's Oil Price Reforms a Major Step in Deregulating Its Petroleum Sector," *Oil and Gas Journal*, Aug. 10, 1998; Nakajima, "Price Reforms in China"; and Chang, "Oil Price Controls to be Lifted Gradually."

⁴⁰ Xu Yihe, "Sinopec Proves 1.086B Bbl Crude Oil Reserves Jan–Sep," *Dow Jones Newswires*, Oct. 24, 2000; and Karby Leggett, "China's Sinopec Unit Executive Is Issued Death Sentence," *Asian Wall Street Journal*, Oct. 17, 2000.

⁴¹ "Sinopec Says It Sold Sudan Asset to CNPC for \$9.7 Mil in June," *Bloomberg News*, Nov. 6, 2000; Murray Hiebert, "Sinopec's IPO Hit by Human Rights Protests," *Far Eastern Economic Review*, Oct. 25, 2000; and Lander, "China's No. 2 Oil Company Prepares to Go Public."

Mobil promised up to \$1 billion for 19 percent of the offered shares, Royal Dutch/Shell some \$430 million for 8.2 percent, BP Amoco \$400 million for 7.6 percent, and Asea Brown Boveri \$100 million for 1.9 percent. Once again, several Hong Kong tycoons were involved in purchasing the remaining shares; some of them invested well over \$1 billion to ensure access to China's retail markets. In the end, Sinopec raised \$3.5 billion after floating 17.6 billion shares at HK\$1.59 per share, or 20 percent of its total equity, in October 2000. On Wall Street, the firm's 16.8 million ADR shares began trading at \$20.645 per share.⁴²

Deals with investors quickly followed. Sinopec partnered with Royal Dutch/Shell to explore natural gas deposits in western China, invest in a \$150 million fertilizer plant in Hunan province, manage refueling operations at Chinese airports, and run 500 gas stations in Jiangsu province. Sinopec also partnered with ExxonMobil to run 500 gas stations and expand a major petrochemical plant in Guangdong province. Lastly, the firm partnered with BP Amoco to run 500 gas stations in Zhejiang province and construct a \$2.5 billion ethylene plant near Shanghai. Eventually, BP Amoco hopes to operate 800 gas stations in China.⁴³

CNOOC. CNPC's offshore counterpart, CNOOC, was established in February 1982. It assumed responsibility for all the oil and natural gas exploration and production activity in China's offshore blocks, including the administration of contracts with foreign oil companies. In October 1998, Beijing allocated the management of China's future LNG imports to CNOOC's portfolio.

Although PetroChina's offering was the first for China's oil majors, CNOOC, widely respected in the oil industry as the most professionally managed of China's oil companies, was to have offered its shares on international stock exchanges in October 1999. But faced with lukewarm investor interest, Beijing aborted the public offering. Instead, in April 2000 CNOOC raised over \$450 million in a round of private placements with, among others, the Government of Singapore Investment Corporation, American International Group Asian Infrastructure Fund, Hutchinson Whampoa Limited, and Hong Kong Electric Holdings Limited. Learning from its first experience, CNOOC tempered its ambitions and replaced its lead underwriter, Solomon Smith Barney, with a team including Credit Suisse First Boston, Merrill Lynch,

⁴² Jason Overdorf, "Exxon Mobil Affiliate Buys 19% of China Pete Offering," *Dow Jones Newswires*, Oct. 18, 2000; "Megamajors Open Door to China Expansion Plans," *Oil and Gas Journal*, Sept. 25, 2000; Xu, "Sinopec's IPO May Outperform PetroChina"; and Leslie P. Norton, "Asian Trader," *Dow Jones Newswires*, Sept. 9, 2000.

⁴³ BP Amoco's ethylene plant, which has an annual capacity of 900,000 tons and is slated to open in 2005, would be China's third. BASF and Sinopec are expected to bring a plant in Nanjing online as early as 2004 with a capacity of 650,000 tons per year, and Royal Dutch/Shell and CNOOC signed a deal to build yet another plant in 2005, with a capacity of 800,000 tons per year, in Guangdong province. Peter Wonacott, "Shell Plans \$300 Million Investment in China National Offshore Oil IPO," *Wall Street Journal*, Nov. 15, 2000; and "Sinopec, BP to Finish Petchem Feasibility in Dec," Reuters, Nov. 9, 2000.

and BOC International. Still hoping to raise \$1.2–1.5 billion, the company prepared its second IPO attempt for the first quarter of 2001 on the Hong Kong and New York exchanges. According to the *Financial Times*, about 25 percent of the concern's equity will be floated. With foreign firms now accustomed to acquiring minority interests in Chinese oil companies, Royal Dutch/Shell was willing to invest up to \$300 million for 20 percent of CNOOC's initial offering. The two companies would then cooperate in natural gas marketing and offshore exploration and production. In November 2000, CNOOC announced that Royal Dutch/Shell would help it develop the Pinghu field to provide natural gas for power stations near Shanghai. Meanwhile, BP Amoco, which invested in the offerings of PetroChina and Sinopec, may also purchase up to \$200 million of CNOOC's share issue.⁴⁴

The China National Star Petroleum Corporation (CNSPC) was established as yet another Chinese national oil company in January 1997. Its stated purpose was to commercialize the activities of China's oil bureau and research institutes, now under the Ministry of Land and Natural Resources. After CNOOC's offering, CNSPC remains the last major Chinese oil company in government hands.

However, raising money from share offerings does not ensure that Chinese oil companies have secured their futures. These publicly held concerns will have to become profitable on an international scale, especially as China's domestic energy markets become more open to foreign competition. Otherwise, the firms' remaining equity will devalue and they will have to turn again to Chinese bank loans for financing and survival. The ultimate success of a modern oil company depends not only on its ability to find, produce, refine, and market energy products, but also on its ability to manage risk in its asset portfolio, structure deals for alliances and acquisitions, and create an accountable corporate culture. So far, PetroChina, Sinopec, and CNOOC have all secured partnerships with major foreign oil companies, which have given them a steady foundation from which to grow in China and abroad.⁴⁵

⁴⁴ Bei Bei She, "China's CNOOC Seen Attractive at Second IPO Attempt"; Sonia Tsang, "China's CNOOC to Issue 1.64 Shrs in IPO—Source," *Dow Jones Newswires*, Dec. 14, 2000; Wonacott, "Shell Plans \$300 Million Investment"; "Sinopec Finds Oil, Gas in Sichuan, Offshore Shanghai," *Bloomberg News*, Nov. 15, 2000; "CNOOC Names Banks for Second Try at Share Sale, Drops Solomon," *Bloomberg News*, Oct. 3, 2000; Karby Leggett, "Sinopec, Royal Dutch/Shell Finalize Wide-Ranging Cooperation Deal," *Wall Street Journal*, Sept. 13, 2000; "BP, ExxonMobil Eye China Retail," *Today's Refinery*, Sept. 2000, p. 6; Nisha Gopalan, "Shell: No Comment on China's CNOOC IPO Plan; Talks Continue," *Dow Jones Newswires*, Aug. 22, 2000; and "China National Offshore Oil to Reorganize," *Asian Wall Street Journal*, Jan. 6, 1998.

⁴⁵ If successful, China's oil companies can make secondary offerings of their remaining equity and generate more capital to fund future expansion without the need for government loans or subsidies. "The Longer March," *Economist*, Sept. 30, 2000; David Ernst and Andy M. J. Steinhubl, "Petroleum: After the Megamergers," *McKinsey Quarterly*, no. 2, 1999, pp. 49–57; Tim Bleakley, David Gee, and Ron Hulme, "The Atomization of Big Oil," *McKinsey Quarterly*, no. 2, 1997, pp. 122–42; and David Ernst and Andy M. J. Steinhubl, "Alliances in Upstream Oil and Gas," *ibid.*, pp. 144–55.

Chinese Investment Abroad

Throughout the 1980s, Beijing hoped that new oil and natural gas discoveries in the Tarim Basin could provide most of the energy resources China would need to sustain its economic development. By the mid-1990s, China's Ministry of Geology and Mineral Resources privately admitted that the basin was not going to yield enough energy resources to fuel China's economy. To meet the 1993 goal set forth by Premier Li Peng "to secure the long-term and stable supply of oil to China," Beijing would have to ensure an international energy supply that would not be vulnerable to blockade or embargo by any single country. Sometimes this strategy was referred to as a "strategic oil supply security system," and CNPC chairman Wang Tao attested to its importance when he affirmed at the Fifteenth World Petroleum Congress in October 1997 that international investment was the key to China's energy security.⁴⁶

International investment was considered by some observers to be a "fundamental change in Beijing's energy policy" and an implicit abandonment of self-reliance. But it could also be seen as a logical extension of a policy of self-reliance, given China's recognition that its domestic oil and natural gas supplies are unlikely to meet its ultimate goals.⁴⁷ Thus, CNPC ambitiously expanded its overseas operations and by December 2000 had acquired over \$8 billion in oil and natural gas properties worldwide. Among the first was in South America, where it acquired the Peruvian Talara block for \$25 million in 1993. In East Asia, CNPC signed a production-sharing contract to develop the Sukhothai field in Thailand, and CNOOC purchased a 32.6 percent stake in an offshore oil field in Indonesia. In 1995, CNOOC acquired another 6.9 percent of the latter field.⁴⁸

A much larger flurry of investment occurred two years later. In June 1997, CNPC prevailed over several foreign competitors, including Amoco and Texaco, to secure an agreement with Kazakhstan to buy a 60 percent stake in the state-owned Aktyubinsk munaigaz production association, which has oil reserves of some 483 million tons. In return, CNPC promised to invest \$4 billion in the firm over the next twenty years. Most of the money would be used to develop the Zhanazhol and Kenkiyak oil fields in the Aktyubinsk (Aqtöbe) region of western Kazakhstan. In 1998, the fields produced just 2.6

International investment could be seen as a logical extension of a policy of self-reliance.

⁴⁶ Rashid and Saywell, "Beijing Gusher"; Wang Tao, address, 15th World Petroleum Congress, Beijing, Oct. 14, 1997; "China's Gas Production Will Not Meet Demand by 2020"; Baert, "China Will Need More Oil Imports"; and Ian Johnson, "China Searches for Stable Sources of Energy Abroad," *Wall Street Journal*, June 25, 1997.

⁴⁷ Similarly, while China has endeavored to remain self-reliant in military equipment, it has chosen to buy equipment from foreign countries whenever its domestic defense industry has failed to meet its military needs.

⁴⁸ Erica Strecker Downs, *China's Quest for Energy Security* (Santa Monica, Calif.: RAND, 2000), pp. 21–23; and Zhang Yirong, "China Quickens Its Pace of Overseas Oil Operation," *China Oil and Gas*, Sept. 1997, pp. 174–75.

million tons of oil, half the level CNPC had originally hoped for. The majority of the oil is shipped to the Orsk refinery in Russia for processing. But “Orsk wants to pay Aktyubinsk munaigaz in roubles rather than dollars, which the latter is refusing to accept. The alternative is for CNPC to ship its oil to the Chimkent refinery and pay high transport costs.”⁴⁹

Nevertheless, probably the key reason why the Kazakh government chose the CNPC bid was that CNPC offered to build a 3,000-kilometer pipeline linking Aktyubinsk to China. Such a pipeline would provide a needed alternate outlet for Kazakh energy resources to world markets. For the most part, Kazakhstan still relies on decaying pipelines that wind through Russia, where oil is sometimes siphoned and payment is generally unreliable. The creation of an alternate route for Kazakhstan’s oil and natural gas would also be important to Astana’s desire for greater independence from Moscow. CNPC initially estimated that the pipeline would cost \$3.5 billion, but many Western analysts expect it to cost even more, given the rough terrain and the large-diameter pipe that would be needed to make the project profitable. CNPC and Kaztransoil are currently surveying the route as part of their joint feasibility study. However, the pipeline’s economic profit is not the only potential benefit for China. Once built, it will give Beijing leverage in Kazakhstan, where Uighur exile groups seeking Xinjiang’s independence are based. In any event, despite CNPC attempts, few foreign investors have shown interest in financing the project, and CNPC, Exxon, and Mitsubishi shelved the Kazakhstan-China pipeline project in August 1999 after completing a joint study.⁵⁰

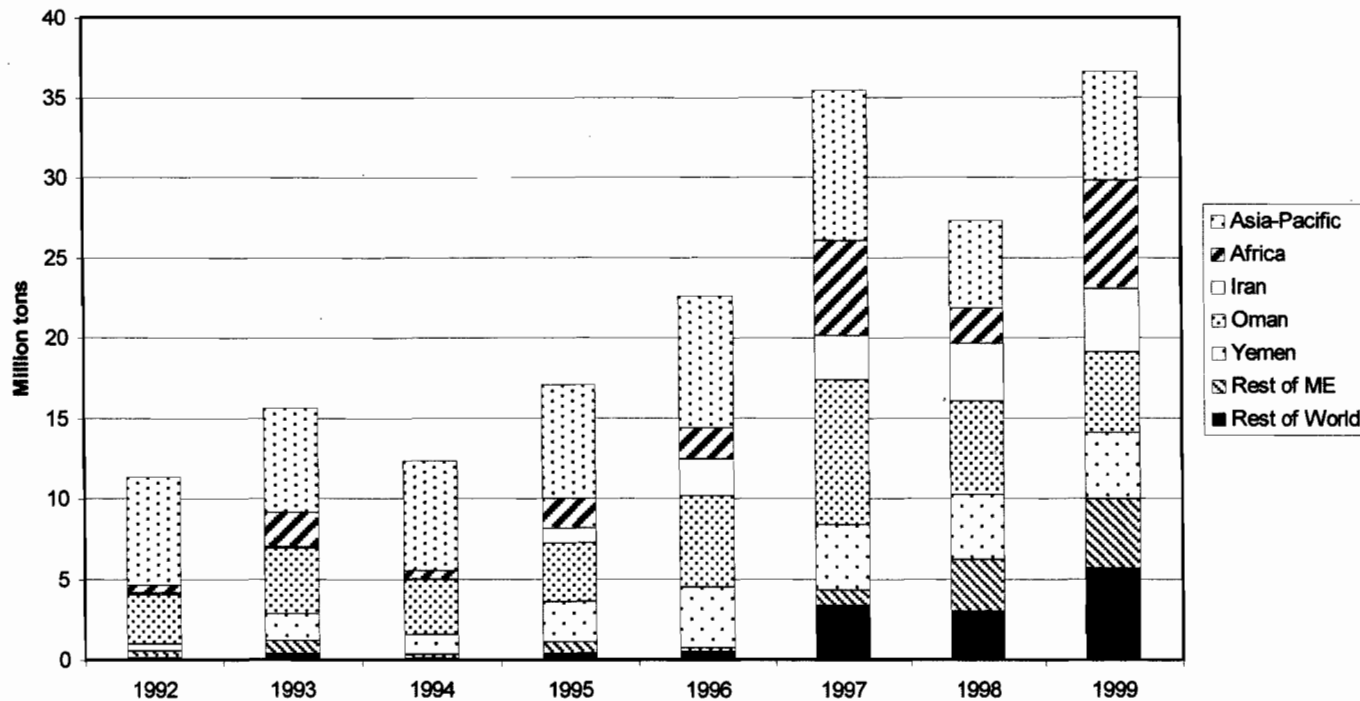
The first trial shipment of Kazakh oil to China occurred in October 1997, when Chevron transported 1,700 tons of oil from its Tengizchevroil joint venture in Kazakhstan to a Sinopec refinery near Urumqi. That coincided with the arrival of the first shipment of 60,000 tons of oil from CNPC’s Peruvian fields at the port of Qinhuangdao in Hebei.⁵¹

In September 1997, Premier Li Peng visited Kazakhstan and signed an agreement under which CNPC purchased a 60 percent interest in Kazakhstan’s Uzen oil field for \$1.2 billion. Located in the western Kazakh province of Manguistau, Uzen has an estimated oil reserve of some 150–200 million

⁴⁹ *Country Report: Kazakhstan, 1st Quarter 1999* (London: EIU, 1999), p. 32; *Country Report: Kazakhstan, 4th Quarter 1997* (London: EIU, 1997), p. 37. See also *Country Report: Kazakhstan, 3rd Quarter 1997* (London: EIU, 1997), p. 33; “Chinese Premier to Sign Oil Contract with Kazakhstan,” *Agence France-Presse*, Sept. 9, 1997; Johnson, “China Searches for Stable Sources of Energy Abroad”; and “China Takes Control of Kazakhstan’s Aktyubinsk,” *East European Energy Report*, June 24, 1997, p. 16.

⁵⁰ Kazakhstan, China, the Kyrgyz Republic, Russia, and Tajikistan formed the Shanghai Five in March 2000, with the goal of coordinating measures to combat terrorism from Islamists throughout Central Asia and Xinjiang. Already, the Kazakh and Kyrgyz governments have cracked down on Uighur groups within their borders. *Country Report: Kazakhstan, April 2000* (London: EIU, 2000), p. 14; “CNPC Shelves China-Kazakhstan Oil Pipeline,” *Oil and Gas Journal*, Aug. 30, 1999, p. 44; and Quan Lan, “Transnational Oil Pipeline Shelved,” *China Oil, Gas and Petrochemicals*, Aug. 15, 1999, pp. 2–3.

⁵¹ “Chevron to Move Oil to China,” *Wall Street Journal*, Oct. 17, 1997.



Note: Rest of ME = countries in the Middle East (excluding Iran, Oman, and Yemen).

Sources: Chinese Customs Statistical Review, 2000; BP Amoco, *Statistical Review of World Energy*, Jun. 2000; Fan Wenxin, "China's oil trade hits record highs in 1999," *China Oil, Gas and Petrochemicals*, Feb. 1, 2000, pp. 10-13; author's estimates.

Figure 2. Origins of Chinese Oil Imports

tons. In the deal, CNPC promised to give the Kazakh government 8 percent of its royalty profits, pay off Uzen's existing \$6 million debt, invest \$10 million in training programs for Kazakh workers, and provide \$27 million for social services to local Kazakh communities. As in the case of Aktyubinsk-munaigaz, CNPC outbid foreign competitors by as much as 30 percent and paid dearly for the field. And as before, China's pledge to build a pipeline played a large role. Moreover, China suggested that it could build a second pipeline from Manguistau to Iran—an arrangement that American oil companies could not match due to U.S. economic sanctions against Iran. Although a Chinese feasibility study on the pipeline project in 1998 had unfavorable results, President Jiang Zemin revived the project in June 2000 during a visit to Turkmenistan. Even so, CNPC has admitted that financing such a venture would be difficult and has scaled back its commitment to building only those parts of the pipeline within Kazakhstan.⁵²

CNPC's Central Asian exploits did not end there. In 1995, one of CNPC's subsidiaries signed a drilling service agreement with Uzbekistan for three production wells and two exploration wells. Two years later, CNPC and Agip agreed to form a joint venture to operate in areas of common interest, including Central Asia. The joint venture encompasses exploration, production, refining, and marketing. Also, CNPC and India's Oil and Natural Gas Corporation Videsh formed a joint venture to explore for oil in the Indian company's Kazakh concession in January 1998. CNPC representatives in Ashgabat are also negotiating for access to Turkmenistan's massive natural gas reserves.⁵³

In the Middle East, where an increasing portion of China's imported oil originates, Beijing has courted many countries. William Ramsey, deputy director of the International Energy Agency, sees the "inevitability of increasing dependency on the Middle East for China" (see Figure 2). One area of particular Chinese interest has been Iraq, which controls about 10 percent of the world's reserves. For its part, Iraq, hoping to rebuild its oil industry after the Persian Gulf War, has been eager to sign a number of production-sharing contracts. In 1997, CNPC bought a 50 percent stake in the al-Ahdab oil field for \$1.2 billion. The field has an estimated oil reserve of 180 million tons and is reputedly able to produce up to 90,000 barrels per day. So far, CNPC has been limited to seismic surveys of the 250-square-kilometer acreage due to economic sanctions imposed by the United Nations. In 1998, CNPC began negotiating with Iraq for a contract to develop the Halfayah oil field.⁵⁴

⁵² Ibid.; *Country Report: Kazakhstan, September 2000* (London: EIU, 2000), p. 9; *Country Report: Kazakhstan, 1st Quarter 1999* (London: EIU, 1999), p. 32; "Kazakhstan's Pipeline to Prosperity," *Economist*, Oct. 11, 1997; "Central Asia: China's Strike," *Economist*, Aug. 16, 1997; and *Country Report: Kazakhstan, 3rd Quarter 1997*, p. 33.

⁵³ Rashid and Saywell, "Beijing Gusher."

⁵⁴ Quotation from Evagora, "China Oil Imports Forecast to Rise." See also Xu Yihe, "China's Dependence on the Middle East May Increase," *Asian Wall Street Journal*, Mar. 30, 1999; Xiaojie Xu, "China and the Middle East:

By October 2000, the Chinese National Machinery and Equipment Import and Export Company completed construction of a 222-megawatt power station near Iraq's northern oil center of Kirkuk, easing chronic electrical shortages in the area. The \$75 million natural gas-fired power station was the first of its kind built since the Persian Gulf War. The Chinese company also signed a \$200 million contract to construct the first phase of a new 1,200-megawatt power plant in Samarra, 100 kilometers north of Baghdad, and was awaiting U.N. approval to start. Moreover, Beijing has intimated that once sanctions are lifted, it would be willing to resume arms sales and production assistance to Iraq.⁵⁵

The energy relationship may reinforce military and political ties between China and Iran.

Further to the east, China has made overtures to Tehran to gain access to Iranian oil and natural gas fields. In 1997, CNPC began talks with Iran's National Oil Company for a joint venture to explore for oil in offshore blocks in Iran as well as in third countries. Progress was slow, but eventually Dagang Oil Field Company, a PetroChina subsidiary, signed a series of contracts worth more than \$12 million to drill or service over seventy oil and gas wells, while Chinese oil companies were invited to bid on forty-three Iranian exploration projects in August 1998. In a separate agreement a year later, Chinese shipbuilders signed contracts valued at \$400 million to build oil tankers for Iran.⁵⁶

Some observers have speculated that the energy relationship between China and Iran would reinforce their military and political ties. Since the 1980s, Beijing has sold Tehran a large amount of military equipment as well as dual-use technology related to the manufacture of nuclear, biological, and chemical weapons. In October 1997, China pledged to end transfers of dual-use technology, but has continued to help Iran build a missile factory at Isfahan and improve its Zelzal-3 missile program with guidance, gyroscope, and solid fuel technology. In addition, Chinese engineers are reportedly working in Iranian missile fabrication plants.⁵⁷

Cross-investment in the Energy Sector," *Middle East Policy*, June 2000; pp. 129–30; and Hassan Hafidh, "Iraq and China Sign \$1.2 Billion Oil Contract," Reuters, June 4, 1997.

⁵⁵ Ibid.; Leon Barkho, "Chinese Power Station Built in Iraq," Associated Press, Nov. 2, 2000; Johnson, "China Searches for Stable Sources of Energy Abroad"; and Daniel L. Byman and Roger Cliff, *China's Arms Sales: Motivations and Implications* (Santa Monica, Calif.: RAND, 1999), pp. 13–14, 51.

⁵⁶ "CNPC Wins \$85 Mln Gas Drilling Contract in Iran, Xinhua Says," *Bloomberg News*, Aug. 21, 2000; Xu Yihe, "China's Dagang Oil Signs Pete Well Svc Pact with Iran," *Dow Jones Newswires*, Feb. 21, 2000; Hooman Estelani, "A Study of Iran's Responses to U.S. Economic Sanctions," *Middle East Review of International Affairs*, Sept. 1999; Wu Qiang and Xian Xuemei, "Zhongguo yu Zhongdong de nengyuan hezuo" (China's dependence on Middle East energy), *Zhanlue yu guanli*, no. 2, 1999, pp. 49–52; John Calabrese, "China and the Persian Gulf: Energy and Security," *Middle East Journal*, Summer 1998, pp. 351–66; and "CIA Predicts Surge in Chinese Crude Oil Imports," *Jane's Defence Weekly*, Jan. 21, 1998.

⁵⁷ It should be noted that the Iranian military generally distrusted Chinese equipment during the Iran-Iraq War and tried to avoid using it in combat. International Institute for Strategic Studies, *The Military Balance 2000–2001* (Oxford: Oxford University Press, 2000), p. 132; Elaine Monaghan, "China Escapes US Arms Sanctions, Iran/

Almost unnoticed in May 1997, the Great Wall Drilling Company, a CNPC subsidiary, finalized its first drilling contract in Sudan. CNPC bought a 40 percent stake in Sudan's Greater Nile Oil Project, which included three exploration blocks, a 1,500-kilometer pipeline, and a refinery. The other stakeholders included Malaysia's Petronas with 30 percent, Canada's Talisman Energy with 25 percent, and Sudan's state-owned oil company with 5 percent. By April 2000, Great Wall had invested \$700 million and drilled some fifty-seven oil wells, and in October renewed its drilling contract for the three blocks and secured a \$42 million drilling contract for three drilling rigs and dozens of new oil development wells.⁵⁸

In 1997, CNPC also began joint exploration of the Chad Basin with the Nigerian National Petroleum Company and bought two blocks in the Niger River delta the following year. In Angola, it signed a letter of intent for joint construction of a refinery in Lobito City.⁵⁹ And in Venezuela, it bought the Caracoles block for \$241 million and the Intercampo Norte block for \$118 million in June 1997. The combined production of the two fields is estimated at 9,400 barrels of oil per day. For both blocks, the Chinese company's bids were twice as high as competitors' offers. As John Imle, Jr., a Unocal executive, reflected, "They're acquiring a lot of crude oil resources and they're certainly very liberal about what they're paying."⁶⁰

Even as Chinese oil companies look abroad, Russian firms have looked to China to find a market for the vast oil and natural gas reserves of the Russian Far East. China and Russia agreed on joint development of the Kovyktinskoye gas field, near Lake Baikal, in 1997, and pledged to build a pipeline to China. The \$8–12 billion deal, it is hoped, will eventually provide China with 20–30 billion cubic meters of gas per year via a massive pipeline stretching 3,400 kilometers through Russia, Mongolia, and China's Jiangsu province. From there, some plans envision extending the pipeline underwater another 1,200 kilometers to South Korea and Japan. Initial construction was slated to begin in 2003.⁶¹

Pakistan Hit," Reuters, Nov. 21, 2000; Byman and Cliff, *China's Arms Sales*, pp. 8–13, 51; Li Weijian, "Petroleum from the Middle East: China's Strategic Option in the 21st Century," *Zhongguo Pinglun*, Mar. 3, 1999, p. 77; Shirley A. Kan, *Chinese Proliferation of Weapons of Mass Destruction: Background and Analysis* (Washington, D.C.: Congressional Research Service, Sept. 13, 1996); and Karl W. Eikenberry, *Explaining and Influencing Chinese Arms Transfers*, McNair Paper 36 (Washington, D.C.: Institute for National Strategic Studies, National Defense University, 1995), pp. 21–28, 33–40.

⁵⁸ "China CNPC Unit Wins Sudan Oil Well Contract—Source," *Dow Jones Newswires*, Oct. 31, 2000; Owen Brown, "China's Foreign Ministry Denies Supporting Sudan Army," *Dow Jones Newswires*, Aug. 30, 2000; Xu, "China and the Middle East: Cross-investment," p. 129; and "Sudan Pipeline Operational," *Petroleum Economist*, Aug. 26, 1999.

⁵⁹ Strecker Downs, *China's Quest for Energy Security*, pp. 21–23.

⁶⁰ Rashid and Saywell, "Beijing Gusher." See also Strecker Downs, *China's Quest for Energy Security*, pp. 21–23; and Joyce Liu, "Strained at Home, China Reaches Out for Foreign Oil," Reuters, June 16, 1997.

⁶¹ "China Economy: Oil Pipeline, Rail Link Planned," *EIU*, Feb. 18, 2000; Mark Burles, *Chinese Policy towards Russia and the Central Asian Republics* (Santa Monica, Calif.: RAND, 1999), p. 25; Keun-Wook Paik and Jai-Yong Choi, "Pipeline Gas Trade between Asia and Russia, Northeast Asia Gets a Fresh Look," *Oil and Gas Journal*, Aug.

One of the great challenges has been finding enough demand for the natural gas in northern China to make the pipeline viable, and progress to date on the project has been slow. Nonetheless, with continued energy price reform in China, the pipeline from Irkutsk Oblast has a good chance of becoming profitable. Yukos, Transneft (the Russian oil-pipeline monopoly), and Chinese Oil and Gas undertook a feasibility study for the Kovyktinskoye-to-Beijing segment of the pipeline in early 1999. In October of that year, Korea's Kogas elected to participate in the pipeline project. In addition, Yukos, Transneft, and China National United Oil Corporation agreed in early 2000 to build an oil pipeline from Irkutsk to China as well. "Oil analysts have praised Russia-China pipeline projects because Russia has long needed additional export routes and China is a fast growing market."⁶²

In sum, as Hu Angang, an energy analyst at the Chinese Academy of Science in Beijing, attested: "China's current policy is to make the best use of international resources. China will be even more active [in] international markets because there is not so much [recoverable] oil at home."⁶³

Powering China's Emergence

Beijing no doubt considers dependence on foreign energy sources to be a vulnerability that could be exploited by other countries. To mitigate that possibility, some have suggested that China might elect to acquire energy sources in the region by force, particularly those in the South and East China Seas, where territorial disputes exist between China and its neighbors. However, current Chinese leaders, though mindful of their country's long tradition of energy self-reliance, are acutely aware that the legitimacy of their rule requires sustained economic growth, and that growth would be imperiled by regional instability.⁶⁴

18, 1997, p. 41; "Chemomyrdin Meets with Li Peng, Pipeline Agreement Signed," *Moscow Interfax*, June 27, 1997; and "China to Sign \$10 bn Gas Deal," *Asia Times*, June 18, 1997.

⁶² Other proposed pipeline routes from Russia originate from Yakutsk and Sakhalin Island. Quotation from "Pipeline Will Move Siberia Crude to China," *Oil and Gas Journal*, June 12, 2000, p. 75. See also "Yukos to Organize Consortium for Construction of Oil Pipeline to China," *Russian Oil and Gas Report*, Mar. 31, 2000; "Kogas to Take Part in Gas Pipeline Construction Project Linking Kovyktinskoye Gas Field to China," *Russian Oil and Gas Report*, Oct. 11, 1999; *Country Report: China and Mongolia, 2nd Quarter 1999*, p. 33; Felix K. Chang, "The Russian Far East's Endless Winter," *Orbis*, Winter 1999, pp. 88–92; Gaye Christoffersen, "China's Intentions for Russian and Central Asian Oil and Gas," *National Bureau of Research Analysis*, Mar. 1998; Johnson, "China Searches for Stable Sources of Energy Abroad"; Matthew Sagers and Jennifer Nicoud, "Development of East Siberian Gas Field and Pipeline to China: A Research Communication," *Post-Soviet Geography and Economics*, May 1997, pp. 288–94; and Keun Wook Paik, *Gas and Oil in Northeast Asia* (London: Royal Institute of International Affairs, 1995), pp. 146–70.

⁶³ Liu, "Strained at Home, China Reaches," Reuters, June 16, 1997.

⁶⁴ "Japan and China Eye Each Other Warily—As Usual," *Economist*, Sept. 2, 2000; "China to Import Crude, Not Products: Energy Security Analysis," *Asia Pulse*, Jan. 20, 2000; International Energy Agency, *China's Worldwide Quest*, pp. 1–85; "China's New Petroleum Structure Continues to Evolve under Reform," *Oil and Gas Journal*, Oct. 6, 1997, pp. 23–29; and "Oil Security Risk, Wolf at Door?" *China Oil, Gas and Petrochemicals*, May 15, 1997, pp. 1–5.

As the evidence has shown, China does have access to adequate energy resources, even if they are not as secure as Beijing might desire. Despite many delays and setbacks, foreign oil companies, particularly BP Amoco and Royal Dutch/Shell, continue to proceed with plans to explore and develop Chinese resources. Moreover, their alliances with China's own majors have given the latter an opportunity to strengthen their energy base at home and expand internationally. To be sure, Chinese oil companies will face challenges as they contend with old debt and high operating expenses, but considering its communist past, Beijing's commitment to market reforms in its oil industry has been vigorous.⁶⁵

Chinese investment abroad and partnerships with other governments to obtain foreign energy resources has been equally active. As Paul McDonald, the managing director of a Hong Kong-based oil consultancy, commented, Beijing believes "that there are too many hostile countries around, the United States in particular, which are prone to boycott against countries." Hence, "[j]oint development of overseas resources is one way of securing future [energy] supplies." But the Chinese navy's inability fully to control its sea lanes leaves the country's maritime supply lines vulnerable to interdiction, and as a result, Beijing has encouraged the development of land-based energy supply routes from Central Asia and Russia. While some may not prove economically viable, those from the Russian Far East remain promising. At worst, as suggested by Guang Pan, a scholar at the Institute of European and Asian Studies in Shanghai, the government would have to subsidize pipeline development.⁶⁶

Nothing in this analysis indicates that Beijing will forever refrain from the use of force in East Asia. Nor does it imply that the military procurement of East Asian countries or the continued American presence in the region is unjustified. But it does suggest that China will not undertake military action solely over energy resources unless and until its access to those it has already developed through commercial agreements and diplomacy is seriously threatened. Indeed, the long-standing border dispute between China and Vietnam in the Gulf of Tonkin, where the *Kantan III* once explored for oil and natural gas, was settled in December 2000—not with a naval clash, but with a political accord.⁶⁷



⁶⁵ Trevor MacMurray, "The Challenge Facing China's State-Owned Enterprises," *McKinsey Quarterly*, no. 2, 1994, pp. 63–69.

⁶⁶ Quotation from *Country Report: China and Mongolia, May 2000*, p. 34. See also Guang Pan, "China's Success in the Middle East," *Middle East Quarterly*, Dec. 1997, p. 38.

⁶⁷ "China and Vietnam Sign Accord Settling Gulf of Tonkin Dispute," Reuters, Dec. 26, 2000.