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CHINESE NOCs AND WORLD ENERGY MARKETS: CNPC, SINOPEC AND CNOOC

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ABOUT THE POLICY REPORT

THE CHANGING ROLE OF NATIONAL OIL COMPANIES IN INTERNATIONAL ENERGY MARKETS

Of world proven oil reserves of 1,148 billion barrels, approximately 77% of these resources are under the control of national oil companies (NOCs) with no equity participation by foreign, international oil companies. The Western international oil companies now control less than 10% of the world's oil and gas resource base. In terms of current world oil production, NOCs also dominate. Of the top 20 oil producing companies in the world, 14 are NOCs or newly privatized NOCs. However, many of the Western major oil companies continue to achieve a dramatically higher return on capital than NOCs of similar size and operations.

Many NOCs are in the process of reevaluating and adjusting business strategies, with substantial consequences for international oil and gas markets. Several NOCs have increasingly been jockeying for strategic resources in the Middle East, Eurasia, and Africa, in some cases knocking the Western majors out of important resource development plays. Often these emerging NOCs have close and interlocking relationships with their national governments, with geopolitical and strategic aims factored into foreign investments rather than purely commercial considerations. At home, these emerging NOCs fulfill important social and economic functions that compete for capital budgets that might otherwise be spent on more commercial reserve replacement and production activities.

The Baker Institute Policy Report on NOCs focuses on the changing strategies and behavior of NOCs and the impact NOC activities will have on the future supply, security, and pricing of oil. The goals, strategies, and behaviors of NOCs have changed over time. Understanding this transformation is important to understanding the future organization and operation of the international energy industry.

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Chinese NOCs and World Energy Markets: CNPC, Sinopec and CNOOC

Steven W. Lewis, James A. Baker III Institute for Public Policy

I. INTRODUCTION¹

Will China's national oil companies (NOCs) be major players in world energy markets in the future? This study focuses on the domestic political, economic and social institutions that have shaped the growth of the three large NOCs – China National Petroleum Corporation (CNPC), Sinopec and China National Offshore Oil Corporation (CNOOC) – during the closed, socialist planned economy era of the 1950s through the late 1970s, and during their expansion domestically in the 1980s, and internationally in the 1990s and

¹ The author thanks Jareer Elass for his invaluable assistance in extensive research on the performance of Chinese NOCS, and the following scholars and students for their help in the research for other sections of this paper: Joe Barnes, Matt Chen, Erica Downs, Sizhi Guo, Peter Hartley, Amy Myers Jaffe, Kensuke Kanekiyo, Jason Lee, Mithun Mansinghani, Ken Medlock, Ed Morse, Ronald Soligo, Ting Wang, Xiaojie Xu, Arthur Jiantao Yan, Victor Yue Yuan.

early 21st century.² This paper will explore how these NOCs' historical path of organizational development has created unique institutional constraints on the ability of the Chinese NOCs to grow domestically and internationally, and yet also afforded them unique resources to facilitate their expanding role in domestic and international markets.

Ironically, the future role of these state-owned enterprises – the products of more than five decades of market-reducing socialist economic planning – depends upon their performance in many arenas of competition. China is a marketizing, planned economy that is rapidly integrating one fifth of the world's population into the global economy. Its rapid economic growth has meant that the country has become a net importer of energy resources. It is in this context that China's NOCs face competition for scarce oil and gas resources both domestically and internationally. In their mandate to develop oil and gas assets, they will compete with the NOCs of other countries and the international oil companies (IOCs) for these natural resources, as well as for the necessary labor, technology and services required to bring them to Chinese and world markets. Because the Chinese government, the principal owners of China's NOCs, has the additional goal of relying upon domestic and international capital markets and domestic and foreign investments by individuals, banks, groups and international development aid NGOs, to develop both the energy sector and other sectors of China's economy, the three main Chinese NOCs will continue to compete with other NOCs and the IOCs for scarce capital

² This study focuses on the three largest Chinese national oil companies that dominate both the domestic market and China's efforts to internationalize their energy industry, but a more comprehensive study would also examine the role of other large oil and gas enterprises, including those set up by the central government in the closed economy period in order to handle oil imports and trading, with then exclusive rights to do so (e.g. Sinochem), and by other central government cross-sector enterprises who seek to use their business networks overseas to expand into the oil and gas exploration business (e.g. Norinco's Zhenhua and CITIC Energy) as well as those set up by local governments and entrepreneurs seeking to import oil and oil products (e.g. China Great Wall). As with most studies on China's energy policy, the lack of public sources of information on the Chinese military and its oil resources necessitates its exclusion from this study.

and financial assets as well. Finally, because the Chinese government has directed each of the country's NOCs to become complete vertically integrated oil companies, they will increasingly compete with each other. Their current competition over supplies is largely hidden from public view, but as they develop downstream and retail markets across China and in foreign markets, the needs of marketing and branding will push them to distinguish themselves among their peers in the eyes of consumers. And as they turn to domestic and international equity and bond markets to obtain capital to for investments, they will be forced to develop more ways to present themselves as efficient, productive and transparent corporations before individual and institutional investors alike.

How do CNPC, Sinopec and CNOOC compare to other oil companies, both NOCs and IOCs? This paper begins with comparisons of the basic metrics of economic performance among vertically-integrated major Chinese oil companies: their assets, production, transportation, distribution and sales, both upstream and downstream. The paper will briefly introduce their current relationship to their owner and principal regulator, the Chinese government, in terms of ownership and rent-taking. A more comprehensive history of these three national oil companies would examine the many ways that their own unique paths of development have created strong corporate and organizational cultures as largely autonomous socialist work units.³ In this section, however, the focus is on presenting measures of their performance in terms of the general economic functions they serve in the Chinese economy, both in order to more easily compare them with the economic role of NOCs in other societies, and also in order to

³ For an invaluable set of studies on how Chinese state owned enterprises have developed historically as “cellular” or autonomous economic, political and social organizations, both during the Republic Period and during the Communist era, and in conjunction with the growth of both state and political party organizations, see Lu, Xiaobo and Elizabeth J. Perry, eds., *Danwei: The Changing Chinese Workplace in Historical and Comparative Perspective*, Armonk, New York: M.E. Sharpe (1997).

present them the way Chinese leaders most likely view them: as distinct corporations, but ones that can be reorganized, divided or combined as economic reforms and integration with the global economy may require.

Chinese leaders demonstrated their viewpoint about the potential for reorganization of the oil industry in 1998 when they forced upstream CNPC and downstream Sinopec to swap major oilfields and refineries in order to create two, competing vertically-integrated oil and gas companies. At the domestic subsidiary and individual production unit level, CNPC and Sinopec in particular are still tied together in complex networks of production and distribution, and as they have gone overseas and into previously unexplored areas of China onshore and offshore, they have formed numerous local joint ventures with each other and with CNOOC. The three Chinese NOCs are legally independent entities, but in practice their role in China's planned economy requires that they informally work together frequently.

In the next section of the paper, discussion covers how China's singular institutional path to economic development has created unique constraints on the ability of the Chinese NOCs to grow domestically and internationally. These constraints largely stem from the history of the incremental, bottom-up and decentralized growth of both China's government institutions, as well as its state-owned enterprises, including the very large NOCs and other companies directly owned by the central government. I argue that although such decentralized economic development has afforded some of the production efficiency inducing benefits of competition, it has also created unique institutional barriers to organizational change – particularly in its relationship to the Chinese Communist Party and the Chinese central government. This decentralized approach has

also blocked and obscured necessary reforms in the implementation of policies on key national public good problems, such as how to manage the contribution of assets generated by the privatization of these enterprises to the development of a national social welfare system and to the clean-up of environmental problems created by this industry.

In section three, a brief history of the relationship between the Chinese NOCs and the central and local governments in China is presented in order to demonstrate the long-term presence of these institutional obstacles to the NOCs performance and development.

Finally, the paper examines how domestic political, economic and social factors have shaped the strategies and plans of NOC leaders and Chinese government officials as they face the dilemma of using these state owned enterprises in order to meet increasing demand for oil and other hydrocarbon resources in order to sustain and even accelerate China's economic development. Can the leaders of CNPC, Sinopec and CNOOC maintain the benefits of their unique position in China's decentralized and yet marketizing planned economy, and simultaneously go overseas and compete with other NOCs and the IOCs? Can this activity contribute new oil and gas resources for China's development and for world markets? Can China's government leaders maintain control over these three large and historically autonomous state owned enterprises in order to address the future needs of the domestic economy while still implementing their plans for a comprehensive national social welfare system? Can the obligations to national social welfare be met if at the same time the Chinese government must assist the NOCs in bringing back to China low-cost, secure supplies of oil and gas?

In this paper, I present preliminary conclusions from recent studies by Western scholars to demonstrate that China's NOCs and the central and local governments are

capable of working together on some “going abroad” strategy goals and yet are also constrained by their inability to work together on the resolution of critical domestic economic and political policy issues. The Chinese NOCs are clearly motivated by commercial interests to go overseas, and they have been successful in doing so, particularly when these interests intersect with the geopolitical interests of the Chinese government.

II. CHINA’S ENERGY GIANT NOCs: PERFORMANCE

China’s three major state-owned oil companies dominate the country’s energy industry in all stages of the energy supply chain. In addition to this domestic role, the Chinese government has hopes that the country’s national oil companies (NOCs) will eventually rival the operations of Western oil majors in the scope of their worldwide activities and influence in the international energy market.⁴ Although much attention has been paid in recent years to the three Chinese NOCs investing in international oil exploration and production assets, these purchases have so far not made a significant contribution to China’s massive and growing oil import requirements. In the past ten years, the Chinese state-owned firms have acquired interests in upstream oil projects in Burma, Kazakhstan, Venezuela, Sudan, Iraq, Iran, Indonesia, Ecuador, Peru, Yemen, Oman, Azerbaijan, as well as small shares in projects in Canada and Australia.

⁴ See also several very useful recent studies by scholars examining the three Chinese NOCs, including Sizhi Guo, “The Characteristics of China’s Three Major State-Run Enterprises and their Relationship with the Government” draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006); Xiaojie Xu, “Chinese NOCs’ International Strategies” draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006); and Xiaojie Xu, *Petro-Dragon’s Rise: What It Means for China and the World*, Fucecchio, Italy: European Press Academic Publishing (2002); and Qiliang Bo, “An Exploratory Analysis of Strategic and Organizational Change in CNPC,” unpublished MBA dissertation manuscript, MIT (2001).

Based on six different operational criteria, the *Petroleum Intelligence Weekly* (PIW) ranked the China National Petroleum Corp. (CNPC) as ninth in its 2005 ranking of the world's largest oil companies, up one in ranking from the year before⁵, while the 2006 Fortune Global 500 rankings placed CNPC as 39th in terms of sales revenues, up from a 46th ranking the year before.⁶ For its part, the China Petroleum and Chemical Corp. (Sinopec), the operating subsidiary of the China Petrochemical Corp. (Sinopec Group), was ranked 28th in PIW's most recent listing⁷ and 23rd in the latest Fortune Global rankings.⁸

According to the *Oil & Gas Journal (OGJ)*, China had 18.3 billion barrels of proven oil reserves as of January 2006. The U.S. Energy Information Administration (EIA) has estimated that China would produce 3.8 million barrels a day (b/d) of oil in 2006, slightly higher than the previous year. Of this, 96 percent was expected to be crude oil. The EIA estimates that China will consume 7.4 million b/d of oil in 2006, which would be about a half million b/d increase from 2005. The EIA forecasts that China's increase in oil demand in 2006 will represent 38 percent of the world total increase in demand.⁹

As a net oil importer since 1993, China's petroleum industry is focused on meeting domestic demand, which is expected to balloon in the coming decades.¹⁰ China in 2005 became the second largest oil consumer behind the United States, and it is the world's third largest oil importer behind the U.S. and Japan. The International Energy

⁵ "PIW's Top 50: How The Firms Stack Up," *Petroleum Intelligence Weekly*, December 12, 2005 .

⁶ <http://www.cnn.com/magazines/fortune/global500/2006/snapshots/1983.html>.

⁷ "PIW's Top 50: How The Firms Stack Up," *Petroleum Intelligence Weekly*, December 12, 2005

⁸ [Http://money.cnn.com/magazines/fortune/global500/2006/snapshots/1223.html](http://money.cnn.com/magazines/fortune/global500/2006/snapshots/1223.html).

⁹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

¹⁰ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

Agency (IEA) has reported that between 2000 and 2005, China accounted for 27 percent of the growth in world oil demand. In 2005, China consumed 6.6 million b/d of oil, about one-third of the U.S. consumption of 20.8 million b/d, and imported 3.0 million b/d, about one-quarter of the U.S. level of 13.5 million b/d, according to the watchdog agency.¹¹ Energy experts have estimated that China's oil demand will range from 10 to 13.6 million b/d by 2020 while Chinese domestic oil production will range from 2.7-4 million b/d. Therefore, the country's oil imports in 2020 could range between 6-11 million b/d, accounting for 60-80 percent of China's total domestic consumption.¹²

¹¹ IEA officials have also cautioned that estimates of China's oil demand and consumption do not include reliable estimates on the amount of smuggled oil and oil products, although energy industry experts estimate that they are likely to be slight. Such figures could, however, potentially significantly distort estimates for regions where the gains from smuggling are greatest, especially border areas in South China. See Sherry Su, "China's Cloudy Oil Data," *Wall Street Journal*, February 13, 2007: A18.

¹² See Erica S. Downs, "China's Role in the World: Is China a Responsible Shareholder?" Statement of Erica S. Downs, China Energy Fellow, The Brookings Institution, before the U.S.-China Economic and Security Review Commission, August 4, 2006.

FIGURE ONE:
CNPC, SINOPEC AND CNOOC OIL PRODUCTION

2000-2005 (IN THOUSAND B/D)¹³

	2000	2001	2002	2003	2004	2005	2005/2000
CNPC	2071.7	2067.8	2073.2	2080.2	2091.0	2119.0	102.2%
Sinopec	744.8	756.7	757.8	760.9	770.3	783.8	105.2%
CNOOC	351.4	364.4	419.7	437.1	487.9	552.6	157.2%

FIGURE TWO:
CNPC, SINOPEC AND CNOOC GAS PRODUCTION

2000-2005 (IN MMCF/DAY)¹⁴

	2000	2001	2002	2003	2004	2005	2005/2000
CNPC	1771	1991	2367	2407	2772	3547	200.2%
Sinopec	378	446	478	500	550	590	156%
CNOOC	383	373	359	314	472	492	128.4%

¹³ Adapted from CNPC, Sinopec and CNOOC data presented in Xiaojie Xu, "Chinese NOCs' International Strategies" draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006).

¹⁴ Adapted from CNPC, Sinopec and CNOOC data presented in Xiaojie Xu, "Chinese NOCs' International Strategies" draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006).

About 85 percent of China's oil production capacity is located onshore. CNPC operates the country's largest producing oil field, the Daqing field located in Northeastern China. Daqing, discovered in 1959, accounts for more than 900,000 b/d, or about one-third of China's total domestic crude oil production. The field is mature, and production levels have been reduced since 2004 while CNPC works to extend the life of the field.¹⁵ In 2005, the Daqing field produced around 900,000 b/d of crude and 2.4 billion cubic meters (BCM) of natural gas. CNPC believes that oil production at the field could be sustained above 800,000 b/d for the next five years thanks to new technologies that could increase production efficiency at the declining field. The company also reported in early 2006 that a recent gas discovery at Daqing could boost gas reserves by 200 BCM, which would make the Daqing field China's fifth largest gas production site after the Tarim, Qaidam, Shaanxi-Gansu-Ningxia and Sichuan basins.¹⁶

In April 2004, Chinese authorities announced several new oil discoveries in the existing Shengli field in northeastern China. These finds helped maintain the Sinopec-operated Shengli field as the country's second-largest oil producing field, supplying more than 500,000 b/d. Located on the Yellow River delta in the north section of Shandong Province and on the shore of the Bohai Sea, the Shengli field began to produce oil in 1962.¹⁷ In 2005, the field produced around 525,000 b/d of crude and 31.1 BCF of natural gas.¹⁸

¹⁵ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

¹⁶ "Gas Reserves Grow at Oilfield," *China Daily*, January 14, 2006 <http://www.china.org.cn/english/2006/Jan/155135.htm>

¹⁷ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

¹⁸ Sinopec website: <http://english.sinopec.com/en-business/947.shtml> (accessed February 2007).

The country's third major NOC, the China National Offshore Oil Corp. (CNOOC), produces more than 500,000 b/d from its offshore oil fields in the Bohai Bay and South China Sea.

CNPC is China's largest oil and natural gas producer and supplier, and like its rival Sinopec, is a vertically integrated state energy firm.¹⁹ Sinopec is China's largest producer and wholesale and retail marketer of petroleum products, largest producer and supplier of petrochemical products and second largest crude oil and gas producer.²⁰ CNOOC handles offshore exploration and production and accounts for roughly 15 percent of China's domestic crude oil production.²¹

CNPC and its affiliated companies tend to dominate in China's north and west, while Sinopec and its subsidiaries cover the south and CNOOC the offshore region. While CNPC had traditionally centered primarily on oil and gas exploration and production and Sinopec had mostly focused on downstream activities, the restructuring of these energy firms into integrated companies in the 1990s has helped curb these trends.²² In 1998, as part of the restructuring process, CNPC transferred eight southern oil fields to Sinopec, while Sinopec transferred four northern refineries to CNPC.²³

CNPC operates 14 large and giant oil and gas field enterprises, 14 large-scale refining and petrochemical companies, 19 marketing companies and a large group of

¹⁹ CNPC website: <http://www.cnpc.com.cn/english/gsgk/gsjj.htm> (accessed February 2007).

²⁰ Sinopec website: <http://english.sinopec.com/en-business/947.shtml> (accessed February 2007).

²¹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China*, <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

²² Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

²³ Energy Information Administration: U.S. Department of Energy, *APEC: Energy Industry and Trends* <http://www.eia.doe.gov/emeu/cabs/apec/private&restruc.html> (accessed May 2006).

R&D units and technical service and mechanical manufacturing enterprises located from the Northeast to the Southwest of China.²⁴

As of year-end 2005, CNPC had about 570 million metric tons of oil in place as well as some 358 BCM of gas. The company estimates that it has remaining recoverable oil reserves of 1.65 billion metric tons and remaining recoverable gas reserves of 1.95 trillion cubic meters (TCM). CNPC reported that in 2005 it had produced 2.12 million b/d of crude, which was a 1.3 percent year-on-year increase, and which accounted for 58 percent of the country's total oil output. The company in 2005 also produced 36.7 BCM of gas, a year-on-year increase of 27.9 percent.²⁵

CNPC announced in early 2006 that China had gained 2.42 billion tons of newly-proven oil reserves between 2000 and 2005, as well as additional gas reserves totaling 1.7 trillion cubic meters.²⁶ CNPC operates roughly 50 domestic oil and gas fields.²⁷ PetroChina Company LTD, CNPC's largest listed subsidiary, is a holding company that was formed in 1999 with most of CNPC's assets as a means to offer shares on the international market, and is CNPC's operating vehicle within the country. It was publicly listed in Hong Kong and US New York in April 2000, with CNPC holding 90 percent of its shares.²⁸

²⁴ CNPC website: <http://www.cnpc.com.cn/english/gsgk/gsjj.htm> (accessed February 2007).

²⁵ CNPC website: <http://www.cnpc.com.cn/english/gsgk/gsjj.htm> (accessed February 2007).

²⁶ "Proven oil reserves increase by 2.42 bln tons in 2000-2005 period, CNPC," Xinhua News Agency and *People's Daily News*, January 17, 2006 http://english.people.com.cn/200601/18/eng20060118_236307.html

²⁷ MacDonald, Paul, "China National Petroleum Corporation," *The World's Key National Oil Companies*, Energy Intelligence Group, May 1999, CNPC's Fields and Infrastructure Map.

²⁸ CNPC website: <http://www.cnpc.com.cn/english/gsgk/gsjj.htm> (accessed February 2007).

FIGURE THREE:
CNPC'S REPORTED DOMESTIC OIL AND GAS RESERVES
 2003-2005²⁹

CNPC	2003	2004	2005
Newly Proven Oil in Place (million barrels)	3,117	3,699	4,079
Newly Proven Gas in Place (billion cubic feet)	13,908	7,093	12,640
Remaining Recoverable Oil Reserves (million barrels)	11,642	11,704	11,745
Remaining Recoverable Gas Reserves (billion cubic feet)	59,108	63,699	68,967

²⁹ CNPC website: <http://www.cnpc.com.cn/english/zyw/ktysc.htm> (accessed February 2007).

FIGURE FOUR:
CNPC DOMESTIC CRUDE OIL PRODUCTION
BY MAJOR FIELD

1998-2005 (IN THOUSAND B/D)³⁰

Field	Region	1998	1999	2000	2001	2002	2003	2004	2005	2005/1998
Daqing	Northeast	1140.0	1090.0	1060.0	1030.0	1002.6	968.0	928.6	889.0	77.9%
Liaohe	Northeast	290.4	286.0	280.2	277.0	270.2	264.4	256.6	248.0	85.5%
Xinjiang	Northwest	174.2	179.8	184.0	193.6	201.0	212.0	222.2	233.0	133.9%
Changqing	Northwest	80.0	86.0	92.8	104.0	122.0	140.3	162.2	188	235%
Tarim	Northwest	77.0	85.2	87.0	94.6	100.4	105.0	107.6	120	155.8%
Jilin	Northeast	79.4	68.8	66.8	71.6	88.8	95.0	101.1	110.1	138.6%
Dagang	North	86.0	82.0	80.0	79.0	78.7	84.2	97.6	101.9	118.4%
Huabei	North	94.6	93.6	91.2	90.2	87.6	87.0	86.4	87.0	91.9%
Qinghai	Northwest	35.2	38.0	40.0	41.2	42.8	44.0	44.0	44.0	125%
Tuha	Northwest	59.0	58.0	55.6	49.8	50.2	47.0	45.0	41.9	71%
Jidong	Northwest	12.7	12.6	12.4	12.5	13.0	14.9	20.0	25.0	196.8%
Yumen	Northwest	n.a.	n.a.	8.6	10.4	12.0	14.0	15.0	15.4	n.a.
Sichuan	Northwest	4.3	4.0	3.4	2.8	2.7	2.7	2.7	2.7	62.7%

³⁰ Source: Adapted from data from CNPC, China Petroleum and Petrochemical Association data, in 国际石油经济 (*International Petroleum Economics*), February 2004, pg. 60, and Xiaojie Xu, "Chinese NOCs' International Strategies" draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006).

Sinopec's major physical assets are located in Southeast China, a region that has experienced the highest economic growth. The principal operations of Sinopec Corp. and its subsidiaries include: exploring, developing, producing and trading crude oil and natural gas; processing crude oil into refined oil products; producing, trading, transporting, distributing and marketing refined oil products; and producing and distributing chemical products. Based on 2005 turnover, Sinopec Corp. is one of the largest listed companies in China.³¹ As of year-end 2005, the company had 3.29 billion barrels of proved crude reserves and 835 BCM of proved gas reserves. Sinopec's crude production in 2005 reached about 760,000 b/d, a 1.7 percent increase on 2004 levels, while the company's gas output totaled approximately 6.28 BCM for the year, a 7.2 percent year-on-year jump.³² The Sinopec Group was listed on the New York and Hong Kong stock exchanges in October 2000.

³¹ Sinopec website: <http://english.sinopec.com/en-newsevent/en-news/download/en-news061031.doc> (accessed February 2007).

³² Sinopec website: <http://english.sinopec.com/en-business/947.shtml> (accessed February 2007).

FIGURE FIVE:
SINOPEC'S REPORTED DOMESTIC OIL AND GAS RESERVES
 2003-2005³³

Sinopec	2003	2004	2005
Newly Proven Oil in Place (million barrels)	208	284	306
Newly Proven Gas in Place (billion cubic feet)	254	352	140
Remaining Recoverable Oil Reserves (million barrels)	3,257	2,267	3,294
Remaining Recoverable Gas Reserves (billion cubic feet)	2,887	3,0330	2,951

FIGURE SIX:
SINOPEC DOMESTIC CRUDE OIL PRODUCTION BY MAJOR FIELD
 1998-2005 (IN THOUSAND B/D)³⁴

Field	Region	1998	1999	2000	2001	2002	2003	2004	2005	2005/1998
Shengli	North	546.2	533.0	535.2	533.6	534.3	533.1	534.8	538.9	98.6%
China Star	West	12.4	19.6	48.0	58.8	58.5	65.5	78.5	90.8	732.2%
Zhongyuan	North	80.0	75.0	75.4	76.0	76.0	72.3	67.0	64.0	80%
Henan	Central	37.2	36.6	37.0	37.2	37.6	37.2	37.6	37.4	100%
Jiangsu	East	26.7	29.0	31.0	31.4	31.4	31.6	32.4	32.9	123%
Jiangnan	East	15.1	16.82	17.4	19.0	19.3	19.0	19.2	19.3	127.8%

³³ Sinopec website: <http://english.sinopec.com/en-business/947.shtml> (accessed February 2007).

³⁴ Source: Adapted from data from CNPC, China Petroleum and Petrochemical Association data, in 国际石油经济 (*International Petroleum Economics*), February 2004, pg. 60, and Xiaojie Xu, "Chinese NOCs' International Strategies" draft paper prepared for The Changing Role of National Oil Companies in International Energy Markets a two-year joint study of the James A. Baker III Institute for Public Policy of Rice University and the Petroleum Energy Center of Japan (2006); Note also that China Star was restructured into six branches in 2003, with aggregate data from these presented here for 2003-2005.

Chinese NOCs

In 2005, CNOOC, through its operating subsidiary CNOOC Ltd., had 44 oil and gas fields offshore China, 23 of which were jointly developed with international partners and 21 operated independently by the company. In 2005, CNOOC had produced 39 million tons of oil equivalent (TOE) offshore China and overseas, up from 36.48 million TOE in 2004. In 2005, the company's domestic production totaled nearly 28 million TOE. Bohai Bay, located in northeastern China, continues to be CNOOC's most important and largest oil and gas production base, with proved reserves at the end of 2005 totaling 1.044 billion barrels of oil equivalent (BOE). Those reserves account for 44 percent of the company's total reserves. The Western South China Sea is the most important gas producing area for CNOOC, with a total of 640 million BOE of net proved reserves confirmed in the region by year-end 2005.³⁵

³⁵ CNOOC website: <http://www.cnooc.com.cn/defaulten.asp> (accessed February 2007).

FIGURE SEVEN:
CNOOC LTD. REPORTED OIL PRODUCTION
2001-2005³⁶

CNOOC Oil Production (barrels/day)	2001	2002	2003	2004	2005
Bohai Bay	99,978	127,756	129,506	134,512	178,840
Western South China Sea	41,277	56,910	60,944	55,873	49,016
Eastern South China Sea	81,404	73,792	72,981	96,989	103,741
East China Sea	3,967	3,223	2,536	2,121	1,706
Overseas	2,247	36,944	40,497	29,941	23,565
Total	228,873	298,625	306,464	319,436	356,868

FIGURE EIGHT:
CNOOC LTD. REPORTED GAS PRODUCTION
2001-2005³⁷

CNOOC mmcf/day	2001	2002	2003	2004	2005
Bohai Bay	46.2	47.1	47.1	47.7	49.1
Western South China Sea	139.0	142.3	127.8	215.2	229.6
Eastern South China Sea	0.0	0.0	0.0	0.0	0.0
East China Sea	9.8	12.4	14.2	17.1	18.3
Overseas	0.0	70.8	101.9	84.1	92.7
Total	195.0	272.6	291.0	364.1	389.6

³⁶ CNOOC website: <http://www.cnooltd.com/operations/channel/opertions1846.asp> (accessed February 2007).

³⁷ CNOOC website: <http://www.cnooltd.com/operations/channel/opertions1846.asp> (accessed February 2007).

CNOOC's hopes of developing into a fully integrated oil and gas company were dealt a setback in March 2006 when its parent company announced a plan to hold a separate listing for the best-performing parts of the group's chemicals business. Analysts had hoped that the unlisted state-owned parent group would instead sell the assets to the Hong Kong-listed CNOOC. This would give the exploration and production company a springboard to expand into downstream operations. However, Fu Chengyu, chairman of the parent and head of the listed company, said the group's fertilizer and bitumen units, in particular, had matured and were ready to pursue more rapid growth through an independent listing.³⁸

The three Chinese state oil firms have focused recent oil exploration efforts on developing onshore oil and natural gas fields in the western provinces of Xinjiang, Sichuan, Gansu, and Inner Mongolia as well as offshore fields in the Bohai Bay, Pearl River Delta, and South China Sea. In July 2006, PetroChina announced that it would open nine blocks in the Tarim basin in northwestern China's Xinjiang Uygur Autonomous Region for foreign companies to explore. The nine blocks cover more than 42,000 square miles and according to CNPC hold an estimated 43.9 billion barrels of potential oil reserves. However, foreign firms have responded to previous bidding rounds in the Tarim basin with little enthusiasm, calculating that the remote location and complicated geological structures would make exploration and development difficult.³⁹

In fact, offshore oil exploration in China has been the bigger target for the oil majors. CNOOC has initiated several Production Sharing Contracts (PSCs) with international oil companies for exploration and development in the Bohai Bay region.

³⁸ Enid Tsui, "CNOOC parent to spin off best units," *Financial Times*, March 26, 2006.

³⁹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

ConocoPhillips holds the largest acreage in the area, with total discovered reserves estimated at 732 million barrels. ConocoPhillips has a 49 percent stake in the Bozhong 11/05 block and has produced 30,000 b/d of crude oil from its Peng Lai 19-3 field since 2002, which it expects will eventually produce 140,000 b/d. Other companies involved in oil exploration and production activities in the Bohai Bay region are Kerr-McGee, Apache, Chevron, and Royal Dutch Shell. Some independent analysts estimate that the Bohai Bay area holds more than 1.5 billion barrels of recoverable oil reserves.⁴⁰

II.A FOREIGN ASSETS

In their drive to counter growing imports as domestic production continues to be outstripped by demand, China's three state oil majors have gone on a buying spree abroad. The majors hope to double the amount of imports they bring from their foreign assets by 2010, but they currently only have significant production coming from joint ventures in Sudan and Kazakhstan.⁴¹

CNPC alone has oil and gas assets in 23 countries, including Sudan, Algeria, Ecuador, Nigeria, Chad and Kazakhstan.⁴² In 2005, the company announced its goal to invest a further \$18 billion in foreign oil and gas assets between 2005 and 2020. Despite ongoing controversy, CNPC has invested more than \$8 billion in Sudan's oil sector, including investments in a 900-mile pipeline to the Red Sea.⁴³

⁴⁰ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006)

⁴¹ "China To Double Oil Import From Foreign Assets," *Dow Jones Energy Service*, April 23, 2006.

⁴² CNPC website: <http://www.cnpc.com.cn/english/gsgk/gsjj.htm> last accessed February 2007.

⁴³ For an insightful study of the challenges that China's NOCs and central government pose for the enforcement of international human rights regimes, and for the impact of their investments in Sudan and Burma in particular, see Matt Chen, "Chinese National Oil Companies and Human Rights," *Orbis*. (Winter 2007): 13. Although this and other analyses have focused on the role of the NOCs and other central owned enterprises, given the bottom-up privatization of China's state-owned enterprises in general, and the incomplete integration of oil and gas subsidiaries in particular, the extent of relationships between Chinese

In October 2005, CNPC finalized the \$4.18 billion purchase of Canadian-listed PetroKazakhstan, whose assets include 11 oil fields and licenses to seven exploration blocks. In December 2005, this purchase was complemented by the completion of the 600-mile Sino-Kazakh oil pipeline that will deliver 200,000 b/d of crude oil to China by the end of 2006. The Chinese firm is reported to be looking for other assets in nations neighboring Kazakhstan. In 2005, some of CNPC's other overseas investments included a partnership with Sinopec to purchase Canadian firm EnCana's oil and gas assets in Ecuador for \$1.42 billion and, together with India's ONGC, buying PetroCanada's 37 percent stake in Syrian oil and gas fields for \$573 million.⁴⁴

Sinopec has also looked overseas for oil exploration and production opportunities. In September 2006, Sinopec and ONGC jointly purchased the Colombian oil and gas assets of Texas-based Omimex Resources for \$850 million, which include onshore production and exploration areas with gross proved reserves of more than 300 million barrels of oil and current production at approximately 20,000 b/d.⁴⁵ In June 2006, the company bought a 97 percent stake in Udmurtneft, a mid-sized unit of BP's Russia vehicle TNK-BP, for a reported \$3.5 billion. Udmurtneft produces 120,000 b/d of crude oil and holds 1 billion barrels of proven reserves in Russia.

enterprises and foreign governments has yet to be accurately measured. The role of local governments in China and the impact of residual offices and individuals overseas has yet to be explored. In recent years the Chinese government has attempted to implement regulations that effectively extend overseas the nomenklatura system of appointment and controls over personnel that it has maintained domestically; see, for example, regulations on the behavior of CNPC and CNODC personnel going overseas, in CNPC, *外事规章和礼仪常识 (An Introduction to Foreign Rules, Regulations and Etiquette)*, Beijing: 中国石油出版社 (China Petroleum Industry Press) 2004.

⁴⁴ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

⁴⁵ "India's ONGC, China's Sinopec jointly acquire Omimex's Colombian assets," AFX News Limited, September 21, 2006

In October 2004, Sinopec signed a memorandum of understanding (MOU) with the Iranian government to acquire a 51 percent stake in the large Yadavaran oil field, which industry reports suggest could initially produce 180,000 b/d and ultimately reach 300,000 b/d. Both China and Iran are still mulling over the \$70 billion deal, which would apparently also include a commitment by China to import liquefied natural gas (LNG) from Iran. Reports in September 2006 suggested that a deal was close, with Sinopec to take a 51 percent stake in the project, ONGC a 29 percent stake and the remaining 20 percent to be held by Iranian companies.⁴⁶

Sinopec has also acquired a 40 percent stake in Synenco Energy's \$4.5 billion Northern Lights oil sands project in Canada. The company expects the project to produce a total of 100,000 b/d of synthetic crude oil in 2010 when commercial operations are scheduled to begin.⁴⁷

CNOOC is also working to boost its global oil production and exploration assets, though it has faced at least one serious setback. In August 2005, CNOOC withdrew its \$18.5 billion all-cash bid to acquire U.S. oil firm Unocal after facing pressure from U.S. politicians, who sought to block the Bush Administration from backing the Chinese bid, citing national security concerns. CNOOC had sought to better Chevron Corp.'s \$17.3 billion cash and stock offer for Unocal, but ran afoul of American politics.⁴⁸ CNOOC became Indonesia's largest offshore oil operator in January 2002 with the Chinese

⁴⁶ "Sinopec oil deal with Iran 'likely in two months'," *The Standard*, September 27, 2006 http://www.thestandard.com.hk/news_detail.asp?we_cat=2&art_id=28134&sid=10109627&con_type=1&d_str=20060927.

⁴⁷ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

⁴⁸ Wang Ying, "CNOOC drops bid for Unocal," *China Daily*, August 3, 2005 http://www.chinadaily.com.cn/english/doc/2005-08/03/content_465741.htm

company's purchase of Repsol-YPF's Indonesian oil field interests for \$585 million.⁴⁹ In January 2006, CNOOC signed an agreement with the Nigerian National Petroleum Corp. to purchase a 45 percent stake in a deepwater oil and gas block in the Niger Delta region that contains the giant Akpo field for \$2.3 billion. The Akpo field is expected to come on stream in the second half of 2008 and will ultimately produce 225,000 barrels a day of oil equivalent.⁵⁰ CNOOC has also reached smaller deals for exploration and development rights in Equatorial Guinea and Kenya, among other countries.⁵¹

II.B. CRUDE IMPORTS

China's major oil suppliers in recent years have included African, Middle East and Russian producers: Iran, Oman, Angola, Saudi Arabia and Russia. China's increasing drive to secure oil supplies from Africa has meant that Angola has sometimes narrowly outstripped Saudi Arabia as China's largest source of crude oil imports. From January to September 2006, Angola supplied the Chinese with about 365,000 b/d of crude, while Saudi Arabia supplied it with approximately 360,000 b/d. Angola, Sudan, Congo, Gabon, Equatorial Guinea, Chad and Nigeria supplied nearly one-third of China's crude import needs in 2005.⁵² In general, in recent years the Middle East has provided China with about 50 percent of its imports, and Africa about 25 percent.⁵³ Because Sudan and Kazakhstan, where the NOCs have production bases, are significant but not major

⁴⁹ Patrick Barta, "Cnooc's Ambitions Stunted; Unocal's Assets of Oil and Gas in Asia Will Be Hard to Replicate," *The Wall Street Journal*, July 22, 2006.

⁵⁰ "NNPC approves CNOOC's \$ 2.3 bn stake in block OPL 246," *Alexander's Gas and Oil Connections*, April 21, 2006 <http://www.gasandoil.com/GOC/company/cna61857.htm>.

⁵¹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> (accessed August 2006).

⁵² "FACTBOX-Why is China chasing African oil?" Reuters, November 3, 2006 <http://www.alertnet.org/thenews/newsdesk/SP175749.htm>.

⁵³ From *Petroleum Intelligence Weekly*, December 11, 2006.

suppliers of crude to China, the Chinese economy overall can be said to be reliant upon world oil markets for domestic shortfalls in production.

FIGURE NINE:
CHINA'S TOP 10 CRUDE OIL SUPPLIERS
 OCTOBER 2005 AND OCTOBER 2006
 (THOUSAND B/D)⁵⁴

Country	October 2006	October 2005	Volume Change	Percent Change
Iran	423	395	28	7%
Oman	326	189	137	72.3%
Angola	321	288	33	11.2%
Saudi Arabia	315	289	26	8.7%
Russia	311	304	7	2.2%
Sudan	134	206	-72	-34.8%
Venezuela	102	55	47	84.5%
Kazakhstan	90	25	65	262.1%
Congo	80	116	-36	-30.9%
UAE	78	28	50	182.1%
Others	380	765	-385	-50%
TOTAL	2,558	2,660	-102	-3.8%

⁵⁴ From *Petroleum Intelligence Weekly*, December 11, 2006.

II.C STRATEGIC PETROLEUM RESERVE

Sinopec won approval from the Chinese government in November 2006 to rent out one third or 10 million barrels of storage space at the nation's first strategic oil reserve at Zhenhai, near Ningbo in Eastern China's Zhejiang province, and has been negotiating to double that. China began delivering crude to these storage tanks at Zhenhai in August 2006 as a means to insulate itself from supply disruptions. About three million barrels of Russian crude have been placed there. A second batch of tanks at China's second reserve site in Zhejiang province was to be ready by the end of 2006, with more tanks planned for Qingdao in Eastern China's Shandong province and Dalian in Northeast China's Liaoning province as part of a first phase of a reserve plan. That first phase, set for completion in 2008, would provide total reserve capacity of 102 million barrels -- or about a month of imports at current rates.⁵⁵

The IEA has expressed concern that China's new strategic oil reserves should only be used in the event of real supply disruptions and not for commercial purposes, particularly after hearing that Sinopec had been rented storage space at the Zhenhai tanks. The concern is that China may take a different approach to holding emergency oil stocks than nations belonging to the Organization of Economic Cooperation and Development (OECD) and its International Energy Agency (IEA).⁵⁶

⁵⁵ Chen Aizhu, "China rents strategic oil tanks to Sinopec—sources," *Reuters*, November 7, 2006

⁵⁶ Neil Chatterjee, "China cautioned on oil reserves," *Reuters*, November 11, 2006

II.D REFINING

China runs 95 refineries, behind the U.S.' 132 refineries and ahead of Russia's 45 units. The country's refining capacity is currently about 6.2 million b/d.⁵⁷ Of those 95 refineries, Sinopec operates 56 and CNPC runs 39 units. Thanks to burgeoning domestic demand, low product prices, a fragile supply system and the closing of a number of inefficient refineries, China's National Development and Reform Commission has suggested that the nation needs an additional refining capacity of about 340,000 b/d to meet demand.⁵⁸ Indeed, CNPC was forced to dramatically cut its crude exports in the spring of 2006 to help ease domestic short supply and also decided to temporarily delay refinery maintenance as its units were running at 99 percent capacity.⁵⁹ China still lacks sufficient upgrading refinery capacity suitable for running heavier Middle East crudes, and is forced to pay a premium for light sweet crude oil from Africa and elsewhere.⁶⁰

CNPC and its subsidiary PetroChina have some 2.415 million b/d of refining capacity while Sinopec operates 3.095 million b/d of refining capacity.⁶¹ The state-owned energy firms have moved in recent years to close down a handful of inefficient refineries, with Sinopec alone shutting down about 324,000 b/d of capacity. They have turned their attention instead to expanding their larger facilities and upgrading existing installations.⁶²

⁵⁷ Business & Economics Research Advisor, Oil & Gas Refining, Issue 5/6: Winter 2005/Spring 2006 <http://www.loc.gov/rr/business/BERA/issue5/refining.html>.

⁵⁸ Fu Jing, "Top Planner: Oil refinery capacity 'must rise', " *China Daily*, February 14, 2006 http://www.chinadaily.com.cn/english/doc/2006-02/14/content_519841.htm

⁵⁹ "CNPC slashes exports to ease domestic short supply," Xinhua News Agency, May 18, 2006.

⁶⁰ Jianju Tu, "The Strategic Considerations of the Sino-Saudi Oil Deal," *The Jamestown Foundation*, vol. 6, Issue 14, February 15, 2006.

⁶¹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006.

⁶² "Sinopec works for sustainability," *China Daily*, November 7, 2006.

As the country's largest refiner and refined products producer, Sinopec has 27 refining subsidiaries mainly located in China's southeast coastal area, middle and lower reaches of Yangtze River and north China. In 2005, the company's crude oil throughput was 2.8 million b/d of crude, with about 699,000 b/d of sour crude processed. The company produced about 450,000 b/d of gasoline, about 1.1 million b/d of diesel, and about 133,000 b/d of kerosene.⁶³

Among its refineries, Sinopec operates 15 units with processing capacities of more than 100,000 b/d, with five of them possessing capacities of more than 200,000 b/d. These include:

- The Sinopec Zhenhai Refining & Chemical Co., Ltd. (ZRCC) has an overall processing capacity of 300,000 b/d and is Sinopec's major high sulfur crude processor. The refinery also has a terminal with 250,000 dwt in handling capacity;
- The Sinopec Maoming Refining & Chemical Co., Ltd. has a crude processing capacity of 270,000 b/d, with a dedicated single-point mooring system for crude vessels up to 250,000 dwt. It is also a major refinery for Sinopec to process high sulfur crude;
- The Sinopec Jinling Company has a processing capacity of 260,000 b/d and 77% of the crude is transported through pipelines. It is also designed for high-sulfur crude processing;
- The Sinopec Qilu Company, adjacent to Shengli Oilfield and Qingdao Port, has a processing capacity of 210,000 b/d. It is dedicated to high-sulfur and high TAN crude processing;

⁶³Sinopec website: <http://english.sinopec.com/en-business/948.shtml>.

- The Sinopec Shanghai Gaoqiao Company, with a processing capacity of 200,000 b/d, is a fuel-lubricant-chemical feedstock refinery that manufactures lube oil and petroleum wax.⁶⁴

In 2005, CNPC processed 2.2 million b/d of crude in its refineries, with refined product output totaling 1.4 million b/d. Of that refined product volume, gasoline accounted for about 460,000 b/d, diesel accounted for 898,000 b/d and kerosene 65,400 b/d.⁶⁵

In July 2006, PetroChina completed the expansion of its Dalian refining center, raising the plant's capacity from 210,000 b/d to 410,000 b/d, making it the largest refinery in China. In that same month, Sinopec completed the construction of a new 160,000 b/d refinery at Hainan. The unit went on stream in September 2006, and will be capable of producing diesel and gasoline that meets Euro III standards. In May 2006, Sinopec finished an upgrade at its Guangzhou refinery that boosted capacity from 154,000 b/d to 260,000 b/d and added additional petrochemical units.⁶⁶

In July 2006, the Chinese government approved the construction of a \$5 billion joint-venture refinery to be built by Sinopec and Kuwait Petroleum Corp. (KPC) at Nansha in the Guandong province in southern China. Construction was to begin in late 2006 or early 2007 and be completed by 2010. The Nansha project is designed with a refining capacity of up to 300,000 b/d. An ethylene plant with a further 20,000 b/d of production capacity is also planned.⁶⁷

⁶⁴ Sinopec website: <http://english.sinopec.com/en-business/948.shtml> .

⁶⁵ CNPC website: <http://www.cnpc.com.cn/english/zyyw/lyxs.htm> .

⁶⁶ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006 .

⁶⁷ "Sinopec, Kuwait Petroleum Corp ink major oil deal," Agence-France Presse, July 28, 2006.

If the Nansha refinery project is completed, it will eclipse the \$4.3 billion Huizhou petrochemical project that CNOOC and Royal Dutch/Shell put on stream in March 2006 as the largest Sino-foreign joint venture in the country. CNOOC and Shell 2002 had started construction on the petrochemical complex located in the Guangdong province in November 2002. The facility has annual capacity of producing 800,000 tons of ethylene and 430,000 tons of propylene and could produce upwards of 2.3 million tons of petrochemical products annually to meet demand in south and southeast China.⁶⁸ That project, in addition to CNOOC's decision to build a large refinery beside the Guangdong petrochemical complex, was inspired by the Chinese oil major's goal to expand its reach from offshore oil and gas exploration and production into China's downstream sector.

CNOOC began construction on its 240,000 b/d refinery in December 2005. The refinery will process mainly sour crude from CNOOC's offshore fields. The unit is slated to go on stream in 2008. Most of the oil products will be sold in Guangdong Province, China's largest energy market, which accounts for 20 percent of oil product demand in the country. CNOOC's plan is to operate gas stations in the region, as it currently has no market share of the gasoline retail market, which is dominated by CNPC and Sinopec. The number of gas stations CNOOC would operate in the region would be in line with the company's oil refining capacity by then.⁶⁹

In July 2005, Sinopec reached an agreement with ExxonMobil and Saudi Aramco to expand the capacity at its Quongang refinery in Fujian from 80,000 b/d to 240,000 b/d. A month later, CNPC began building a 200,000 b/d refinery in the city of Dushanzi, located in the Xinjiang Uygur Autonomous Region. The facility is scheduled to be

⁶⁸ "China CNOOC, Shell JV petrochemical complex comes on stream," AFX News Limited, April 3, 2006.

⁶⁹ "CNOOC Lays Cornerstone for Giant Oil Refining Project," Xinhua News Agency, December 15, 2005.

completed by 2007, with a 20,000 b/d ethylene cracker to come on stream in 2008.⁷⁰

II.E RETAIL STATIONS

Sinopec owns approximately 56 percent of some 88,000 gasoline retail stations in China, accounting for some 27,000 stations across the country, with another 4,000 stations that are either partly owned or franchised. PetroChina owns about 24 percent of China's gasoline retail stations. CNOOC, admittedly late to the game, purchased a chain of 22 gas stations in Shanghai in early 2006. Current laws limit the number of wholly-owned gas stations foreign companies can have in China, effectively forcing them to eventually partner with the main Chinese players in the sector. ExxonMobil operates 19 stations under the Esso brand in southern China and has been working with Sinopec and Saudi Aramco to develop a sales-and-marketing joint venture that would eventually have 600 stations in the southern province of Fujian. Although the project was announced in 2004, a formal agreement has yet to be signed.⁷¹

France's Total is collaborating with Sinochem in two joint ventures signed in 2005 to develop 500 stations in China over the next seven years. BP has been working in two separate joint ventures with PetroChina and Sinopec to acquire, build and operate a total of 1,000 service stations in the Guangdong and Zhejiang provinces by 2007. Royal Dutch Shell entered into a joint venture with Sinopec in 2004 to develop 500 Chinese retail stations.⁷²

⁷⁰ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006.

⁷¹ Shai Oster, "Gasoline Suppliers Could Gain As China Bolsters Pump Prices," *The Wall Street Journal*, March 16, 2006.

⁷² Shai Oster, "Gasoline Suppliers Could Gain As China Bolsters Pump Prices," *The Wall Street Journal*, March 16, 2006.

II.F PIPELINES

Although China has numerous domestic oil pipelines, the NOCs are looking to establish a more integrated and complete oil pipeline network to better satisfy growing demand. CNPC's PetroChina currently owns and operates more than 6,000 miles of crude oil pipelines and more than 1,200 miles of refined product pipelines. In 2005, less than one-third of the crude oil transported domestically by CNPC traveled via pipeline, while the rest was delivered by rail.⁷³ In comparison with other NOCs and IOCs, therefore, CNPC is reliant upon China's central government and its Ministry of Railways for the maintenance of a commercially viable means of transporting its oil to domestic users.

In January 2006, PetroChina received government approval to construct two trans-China pipelines that will feed into Zhengzhou in Central China's Henan province, with a total project cost of \$1.5 billion. One line will start from Lanzhou, in Northwest China's Gansu province, with a capacity of 160,000 b/d, and the second will begin at Jinzhou, in the northeastern province of Liaoning, with a capacity of 80,000 b/d.⁷⁴

In 2006, PetroChina put into operation two 1,200-mile pipelines --one carrying crude and the other crude products, from Urumqi in the remote Xinjiang Uygur Autonomous Region in the West to Lanzhou in Gansu. The products line has a design capacity of carrying 200,000 b/d while the crude line can deliver up to 400,000 b/d. The pipelines project cost \$2 billion. The goal is to ultimately link these lines to the China-

⁷³ CNPC website: <http://www.cnpc.com/cn/english/gsgk/gsjj.htm> Last accessed February 2007.

⁷⁴ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006

Kazakhstan pipeline that runs from Atasu in western Kazakhstan to Alashankou in the Xinjiang Uiyghur Autonomous Region.⁷⁵

CNPC also announced in September 2006 that it had plans to boost the capacity of its West-East gas pipeline by 2008, spending \$540 million to increase the line's capacity from 12 BCM to 17 BCM. CNPC said that the expansion would involve increasing the number of pumping stations along the line from the current 10 to 22 and enhancing most of the existing facilities.⁷⁶ The first massive project to pipe natural gas from China's west to the east was put into commercial operation at the end of 2004, originating from the Tarim Basin of Northwest China's Xinjiang and ending in East China's Shanghai. With capacity expanded to 17 BCM in 2008, the supplies would be meeting about 21.5 percent of the country's total gas demand predicted for that year. There is discussion in China's state-run media about building a second West-East gas line but no specifics have been set.⁷⁷

Sinopec is also aggressively enhancing its domestic pipeline network. The company in June 2006 announced its intentions to build a 140-mile crude pipeline that would link its storage terminals at Northeast China's Nanjiang port outside Tianjin municipality with its petrochemical complex in Beijing. In October 2004, Sinopec began constructing a 600-mile pipeline to carry crude from China's east coast to the company's inland refineries, running parallel to the Yangtze River. The first phase of the project,

⁷⁵ David Winning, "China's CNPC Starts Trial Ops Of NW Oil Products Pipeline," Dow Jones, September 28, 2006

⁷⁶ Wang Yu, "CNPC to enhance pipeline," *China Daily*, September 7, 2006 http://www.chinadaily.com.cn/bizchina/2006-09/07/content_683341.htm; and for a more extensive discussion of the history of the pipeline, see Yan, Arthur Jiantao, "China's Localities, State Energy Companies, and the Development of the West-East Gas Pipeline," Presentation at Investment in China's Local Energy Infrastructure, James A. Baker III Institute for Public Policy, Rice University, Houston, USA, April 11, 2005.

⁷⁷ "China plans second west-east gas pipeline," Xinhua News Agency, March 11, 2006

which connects Yizheng to Jiujiang, began operations in May 2006. Once completed, the final pipeline is expected to supply 540,000 b/d of oil to Sinopec's five refineries along the Yangtze River. It will also link up with Sinopec's pipeline network in Northeastern China.⁷⁸

In May 2006, China began receiving crude oil imports through the 620-mile Sino-Kazakh pipeline. The pipeline, connecting Atasu in western Kazakhstan to Alashankou in the Xinjiang Uiyghur Autonomous Region, is China's first transnational crude pipeline. The line, which cost \$700 million to construct, has an initial capacity of 200,000 b/d, with plans to double that by 2010. Half of the imported crude comes from Kazakhstan and the other half from Russia.⁷⁹

China may well benefit from the controversial Eastern Siberia-Pacific Ocean (ESPO) crude pipeline that Russian state pipeline operator Transneft began building in April 2006.⁸⁰ The line is to originate from Taishet in the Russian Far East and is meant to ultimately reach Perevoznaya Bay on the Pacific Coast to supply Asian demand. However, the pipeline project has proved politically sensitive as both Japan and China have sought to influence Russia to an endpoint in the respective countries. Russian

⁷⁸ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html>. Last Updated: August 2006.

⁷⁹ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006.

⁸⁰ For a discussion of Japanese and Chinese competition for Siberian oil and gas, see Lyle Goldstein and Vitaly Kozyrev, "China, Japan and the Scramble for Siberia," *Survival* 48, no. 1 (2006):163-178; and an argument for why China is likely to succeed, given lower transportation costs, higher energy demand growth, and the need to establish firmer political ties between Russia and China, see Gabe Collins, "Fueling the Dragon: China-bound Pipelines are Russia's Most Realistic Asian Energy Options," *Geopolitics of Energy*, 28, no. 9 (2006): 12-20.

officials have said that the first 1,500-mile stretch is expected to be completed in 2009 and reach Skovorodino, located just 30 miles from the Chinese border.⁸¹

The second 1,000-mile stretch of the ESPO pipeline will presumably reach the Pacific Coast on Russian land. Russian officials say they favor a route that will allow oil shipments to both China and Japan. Once completed, the project is expected to carry 1.6 million b/d of crude oil. Western media reports suggest that the first phase of the ESPO to Skovorodino will include a spur to Daqing, carrying as much as 600,000 b/d to one of China's major downstream oil centers. China has lobbied Russia heavily for the spur, fearing that the Siberian oil supplies will be directed only toward the Japanese market.⁸² In March 2006, Transneft signed an agreement with CNPC on construction of a branch line from Skovorodino to the Chinese border. The following October, it was announced that a feasibility study on the spur was being conducted.⁸³

Regardless of the conclusions of the economic feasibility study, it is likely that strong Chinese support for a Daqing spur will continue because it presents a clear opportunity for CNPC and the central government to work together for shared political goals. First, the pipeline could support national energy security goals through diversification of supplies, providing oil and gas from a source that does not require shipment through potentially dangerous seas. The line would also help to develop broader

⁸¹ Vandana Hari, "Siberian crude pipeline to serve both China and Japan: Lukoil," *Platt's Commodity News*, September 6, 2006.

⁸² Rian Jensen, "The Sino-Russian Romance," *Asia Time*, March 21, 2006, http://www.atimes.com/atimes/Central_Asia/HC21Ag02.html

⁸³ "Study begins on Siberia-China pipeline spur," *Alexander's Gas & Oil Connections*, October 26, 2006.

economic ties between Russia and China in order to support geopolitical strategic goals.⁸⁴ Finally, the pipeline serves national development goals because it could provide jobs and lower sources of energy for the economically suffering Northeast, China's "rust belt" of sunset manufacturing enterprises. In recent five year plans, China's central leaders have focused their assistance – largely through redirection of fiscal resources from the prosperous coastal areas of East and South China – on "Developing the West" and "Revitalizing the Northeast," with the formation of informal leadership groups of top central Party leaders to coordinate these goals.⁸⁵

CNPC also favors the Daqing spur because it could provide a much needed shot in the arm for its largest and most politically influential oilfield. As seen in Figure Four, Daqing's oil production, still nearly one-third of China's domestic oil production, represents only 77 percent of what it was in 1998. Many of the hundreds of thousands of layoffs that CNPC has undertaken in recent years have come in the Daqing oilfield, with repeated protests by workers and retired employees. The central government would like to use the Siberian pipeline to revitalize the Northeast, and CNPC would like to use it to revitalize Daqing in particular.

⁸⁴ For the same reasons, CNPC researchers and officials are also interested in investing in Russia's oil industry; see for example, 俄罗斯投资环境研究. (Research on the Investment Environment in Russia) (中国石油出版社 (Beijing: China Petroleum Industry Press 2005).

⁸⁵ For a history of the ongoing "Develop the West" campaign, see Barry Naughton, "The Western Development Program." in Barry J. Naughton and Dali Yang, eds., *Holding China Together: Diversity and National Integration in the Post-Deng Era*. Cambridge, UK: Cambridge University Press (2004): 253-296.

II.G SHIPPING

Unlike pipelines, the Chinese NOCs must work with other state owned enterprises – including tanker companies and ship manufacturers – in order to develop more secure and economical ocean shipping of oil, oil products and natural gas. Chinese-owned ships carried only nine percent of the crude the country imported in 2005. China has a relatively small tanker fleet, with 18 very large crude carriers (VLCCs), most of which are older than the fleets serving other countries.⁸⁶ Currently, China mainly relies on foreign oil tankers to import crude oil and products. Domestic oil tanks handle about one-fifth of the transportation work.⁸⁷ China aims to raise the proportion of its crude oil and products imports carried by Chinese ships to 50 percent by 2010, and to 75 percent by 2020.⁸⁸

Two of China's state-owned shipping companies reported that they were ordering new VLCCs to increase their fleets. China Shipping Group Co. (CSGS) signed a contract with China State Shipbuilding Corporation (CSSC) in October 2006 to build four VLCCs. CSGS currently has three VLCCs, with five more large tankers currently being constructed by the Dalian Shipyard, to be delivered between 2009 and 2010.⁸⁹

The China Ocean Shipping (Group) Co., known internationally as the COSCO Group, announced in early November 2006 that it planned to double its fleet of VLCCs,

⁸⁶ Energy Information Administration: U.S. Department of Energy, *Country Analysis Briefs: China* <http://www.eia.doe.gov/emeu/cabs/China/Oil.html> Last Updated: August 2006.

⁸⁷ "COSCO to double large oil tanker fleet," Xinhua News Agency, November 6, 2006.

⁸⁸ "China to build 4 more VLCCs," *Reuters*, October 29, 2006; and Gabe Collins, "China Seeks Oil Security with New Tanker Fleet," *Oil and Gas Journal*, October 9, 2006: 20-26.

⁸⁹ "China to build 4 more VLCCs," *Reuters*, October 29, 2006.

saying the company needed at least 15 VLCCs to meet its needs. The company currently operates eight VLCCs. COSCO President Wei Jiafu told international media China needed at least 70 VLCCs in order to be self-sufficient in transporting its oil imports, far more than it currently controls.⁹⁰ As experts have noted, seven Chinese companies have crude oil shipping licenses, with five of them state-owned, and even these tanker companies must compete with each other. The future role of government and NOC in the structure of oil shipments to China is as yet undetermined, with some Chinese experts and officials advocating that Chinese oil importers and tanker operators create exclusive, long-term agreements, and others supporting the formation of a tanker shipping pool that could then create a long-term agreement with oil importers.⁹¹

III. HISTORY AND THE RELATIONSHIP TO GOVERNMENT AND OTHER POLITICAL ACTORS

China's singular institutional path of economic development has created unique obstacles for the Chinese NOCs to grow domestically and internationally. These constraints come from their history of the incremental, bottom-up and decentralized growth of both China's government institutions, as well as its state-owned enterprises, including the very large NOCs and other companies directly owned by the central government. This decentralized economic development has provided some of the efficiency benefits of competition, but it has also created unique institutional barriers to

⁹⁰ "China 'needs expanded oil fleet,' " *Reuters*, November 2, 2006.

⁹¹ Gabe Collins, "China Seeks Oil Security with New Tanker Fleet," *Oil and Gas Journal*, October 9, 2006: 20-26.

organizational change – particularly in its ownership and regulatory relationship with the Chinese Communist Party and the Chinese central government.

The complex organizational relationships among Chinese institutions have blocked and obscured necessary reforms in the implementation of policies on key national public goods problems. Historically, China's SOEs have been integral part of the country's social welfare system, providing schools, health and other social services to their workers. One challenge to the corporatization of China's energy SOEs is the policy surrounding the final dispensation of social welfare activities as well as the liability for environmental clean-up. As Chinese energy SOEs move to restructure, the contribution of assets generated by the privatization of these enterprises to fund the development of a national social welfare system and the clean-up of environmental problems created by this industry has to be addressed. A selective history of the relationship between the central and local governments and CNPC, Sinopec and CNOOC clearly reveals the long-term persistence of these institutional obstacles to their restructuring as corporations and their development in more competitive economic environments.

III.A THE EFFECTS OF PRIVATIZATION ON THE DEVELOPMENT OF CHINESE NOCS IN GENERAL

Given obvious constraints on the Chinese government's ability to provide all of the necessary investments to develop a comprehensive national energy infrastructure, China's energy needs for economic development is likely to require at least semi-privatized oil and gas state-owned enterprises (SOEs) in order to compete with the major multi-national companies to accomplish a number of tasks deemed important by Chinese political elites and consumers alike. New corporate structures will be needed to promote an increase in domestic production as well as the attainment of stable, low-cost supplies of oil and gas from overseas. Chinese SOEs have already seen that they must restructure to attract the necessary financial resources, technical expertise and business practices from energy sector partners and investors in domestic and foreign capital markets. Unlike the NOCs of oil-exporting developing economies, the Chinese NOCs have been facing the same pressures to privatize posed by national economies that are attempting to comprehensively integrate all economic sectors with the global economy.⁹²

⁹² Viewed at the level of the national economy, China would not seem to be susceptible to the development problems of "resource curse" economies, and yet the development of resource-providing regions in Northeast China allowed China to become an oil-exporting country in the oil crisis of the 1970s, with the foreign currency from these enabling central government and military leaders to modernize the defense industry with foreign technology. For a discussion of the resulting creation of a "petroleum faction" within the Chinese central government, Party and military, see Kenneth Lieberthal and Michel Oksenberg, *Policy Making in China: Leaders, Structures and Processes*. Princeton, New Jersey: Princeton University Press (1988). Although trade liberalization and surging demand for foreign supplies of hydrocarbons, and the resulting changes in the leadership institutions of the central government and party, may have largely removed the influence of such a faction in national politics, the long-term impact of these at the local and firm level has largely been unexplored by scholars. Here, we might ask: what is the long-term effect of having one oilfield administration in particular (Daqing) play such a leading role in the development of a nation's oil and gas industry? The creation of a sub-national oil producer cartel may lead to the creation of relations or coalitions among local governments that obstruct the development of national-level oil industry regulatory institutions. For a discussion of this in the American historical context (the Interstate Oil Compact Commission as a cartel) see Gary D. Libecap and James Smith, "The Economic Evolution of

Given that the Chinese NOCs were built upon a foundation of decentralized government and economic institutions unique to China, questions remain about whether these Chinese NOCS will be able to compete with the multi-national oil and gas companies. Moreover, the decentralized privatization of the oil and gas SOEs has delayed or blocked the design of comprehensive national energy and energy security policies, and the creation of effective governmental institutions to coordinate them. In recent years, China has experimented with several different organizations for regulation of the industry and for the development of national energy policy, but so far, these institutions have failed to rein in fully decentralized forces such as local governments and the SOEs themselves.

Extensive comparative economic research reveals governments privatize SOEs for a variety of reasons:⁹³

- To raise revenue for the state;
- To promote economic efficiency;
- To reduce government interference in the economy;

Petroleum Property Rights in the United States,” *Journal of Legal Studies* 31, no. 2 (2002): 589-608. For a discussion of how the training practices within one state enterprise may create long-term constraints on the development of national civil service regulatory institutions and private production and transmission institutions in the electric power sector, see Erwin C. Hargrove. *Prisoners of Myth: the Leadership of the Tennessee Valley Authority, 1933-1990*. Princeton, New Jersey: Princeton University Press (1994). Some scholars of Chinese NOCs have examined the role of Daqing in maintaining intra-firm pricing mechanisms that favor its economic position within CNPC and China’s domestic oil sector, and concluded that Daqing has been able to do so because of the political power it wields. See Lin, Kun-Chin. “Embedding Socialist Firms as a Statist Project: Restructuring the Chinese Oil Industry, 1997-2002.” *Enterprise and Society* 7, no. 1 (2006): 59-97; and also Zhang, Jin. *Catch-up and Competitiveness in China: The case of large firms in the oil industry*, London: RoutledgeCurzon (2004). Such studies may inadvertently discount the largely informal and long-term influence Daqing has had through the managerial, accounting and legal training of its officials and professionals, and its creation of uniform production, distribution and sales standards. Its role as both an organizational model and political icon was established in the Maoist era with the mandatory mass popularization of the slogan, “In Agriculture Study Dazhai, In Industry Study Daqing” (农业学大寨, 工业学大庆).

⁹³ Megginson, William L. & Jeffrey Netter, “From State to Market: A Survey of Empirical Studies on Privatization,” *Journal of Economic Literature* 39, no. 2 (2001).

- To promote wider share ownership;
- To provide the opportunity to introduce competition;
- To subject SOEs to market discipline;
- To develop national capital markets.

This research also shows there are many factors affecting the selection of privatization methods:⁹⁴

- History of the asset's ownership;
- Financial and competitive position of the SOE;
- Government's ideological view of markets and regulation;
- Past, present and future regulatory structure in the country;
- Need to compensate important interest groups during privatization;
- Government's ability to credibly commit itself to respect investors' property rights after divestiture;
- Capital market conditions and existing institutional framework for corporate governance;
- Sophistication of potential investors;
- Government's willingness to allow foreign ownership.

What do these comparative studies reveal about successful privatization? First, studies show that privately owned firms are more efficient and more profitable than

⁹⁴ See North, Douglass C., "Privatization, Incentives, and Economic Performance," in Terry L. Anderson and Peter J. Hill, eds., *The Privatization Process: A Worldwide Perspective*, Lanham, Maryland: Rowman & Littlefield, (1996): 25-38.

otherwise comparable state-owned firms. Second, divested firms almost always become more efficient, more profitable, financially healthier, and thereby better able to increase their capital investment spending. Third, some evidence suggests that share issues stimulate national capital markets and modernize corporate governance. Fourth, direct sales and public shares are the most common and most successful methods. Fifth, voucher programs are less common and frequently problematic. Finally, informal privatization (as in China) is the least commonly used method and the least studied.⁹⁵

General studies by such NGOs as the World Bank and the World Energy Council, and industry best practices reports by the energy sector consulting sections of multinational accounting and consultancy firms try to identify successful privatization steps:⁹⁶

- Corporatization prior to privatization and deregulation;
- Identification and compensation of all potential stakeholders;
- Development of transparent legal institutions to resolve potential

⁹⁵ See Steven W. Lewis. "Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China." unpublished dissertation manuscript, Washington University in St. Louis (1996); and Lewis, Steven W. "Privatizing China's State Owned-Oil Companies." paper prepared as part of "China and Long-Range Asian Energy Security: An Analysis of the Political, Economic and Technological Factors Shaping Asian Energy Markets," sponsored by the Center in International Political Economy and the James A. Baker III Institute for Public Policy, Rice University. (1999).

⁹⁶ See World Bank, *Bureaucrats in Business: The Economics and Politics of Government Ownership*, Oxford, UK: Oxford University Press (1995); Bacon, Robert, (1999), "A Scorecard for Energy Reform in Developing Countries," in *Public Policy for the Private Sector*, Note no. 175, April 1999, available at [<http://www.worldbank.org/html/fpd/notes/175/175bacon.pdf>]; World Energy Council, (1999), *The Benefits and Deficiencies of Energy Sector Liberalisation*; London, UK: World Energy Council; PricewaterhouseCoopers. *The Impact of Competition*, Report by the Utilities Project; San Francisco, California: Montgomery Research (2000); World Bank and IESM, (2001), *Modernizing China's Oil and Gas Sector: Structure Reform and Regulation*, A consolidated joint report of the World Bank and the Institute of Economic System and Management, the State Council Office for Reform of the Economic Structure (PRC), (in Chinese and English), Beijing: 中国财政经济出版社; Irwin, Timothy and Chiaki Yamamoto, (2004) "Some Options for Improving the Performance of State-Owned Electricity Utilities." Washington DC: World Bank, Energy and Mining Sector Board Discussion Paper No. 11, February 2004; Aegis Energy Advisors. "State Oil Company Privatization: Aegis Energy's Perspectives on Best Practices," published as part of, "Brazilian Energy Sector Reform," Energy Program of the Baker Institute for Public Policy at Rice University (February 2004), and available on the website of the Baker Institute Energy Forum at [<http://www.rice.edu/energy/publications/brazilenergysector.html>].

conflicts among stakeholders;

- Clear separation of business and government functions.

Because of fiscal and state-enterprise ownership decentralization, the lack of national privatization program makes identification and compensation of potential stakeholders problematic in China. Since structural reforms began in the late 1970s, local governments have been pitted against SOEs and the central government on the question of who will pay the costs of privatization.⁹⁷ The result is that, unlike many of the privatizing former central planned economies of Eastern Europe, China's SOEs have not been auctioned off, or sold on a domestic or international marketplace, but rather purchased through sweetheart deals to influential local elites, or sold piecemeal to former employees through experimental property forms, or to foreign investors (and most recently domestic) through public share offerings.⁹⁸ China's semi-privatization of its NOCs has thus far been driven by the interests and actions of the millions of employees, past and present, of CNPC, Sinopec and CNOOC.

Much of China's privatization has followed the institutional path of China's countryside, which began to decollectivize in the middle 1970s under such reformers as

⁹⁷ For useful recent studies of the incremental emergence of China's decentralized pension and social welfare systems, see Frazier, Mark. Chinese Views on Pension Reforms." *Asia Policy*. (January 2006): 43-68; and also Trinh, Tamara (2006) "China's Pension System: Caught Between Mounting Legacies and Unfavorable Demographics" Deutsche Bank Research, February 17, 2006; Frankfurt, Germany, available at [<http://www.dbresearch.com>] as of November 20, 2006.

⁹⁸ Chinese scholars have debated about the long-term impact of this lack of a national privatization program, speculating about whether or not it has become a lost opportunity for national discussion of critical social welfare issues in general; see Hui Wang, "Contemporary Chinese Thought and the Question of Modernity," in Xudong Zhang, ed., *Whither China: Intellectual Politics in Contemporary China*. Durham, North Carolina: Duke University Press (2001): 161-198; and Wang, Shaoguang. "The Changing Role of Government in China." In Xudong Zhang, ed., *Whither China: Intellectual Politics in Contemporary China*. Durham, North Carolina: Duke University Press (2001): 123-160; and for a broad-ranging summary also Zhang, Xudong. "The Making of the Post-Tiananmen Intellectual Field: A Critical Overview." In Xudong Zhang, ed., *Whither China: Intellectual Politics in Contemporary China*. Durham, North Carolina: Duke University Press (2001): 1-78.

Zhao Ziyang, then Party secretary of Sichuan Province, and Hu Yaobang, who would later come to lead central Party organs in the 1980s and then in turn mentor the current generation of central leaders, including Premier Wen Jiabao.⁹⁹ The privatization of urban state owned enterprises in the services and light-manufacturing sectors followed the privatization of the rural areas. The administrative and legal reforms recognizing these new forms of property – public stock companies, stock cooperatives and other quasi-private forms of collective property ownership – were first formalized in such localities as Shanghai, under such leaders as Zhu Rongji, Wu Bangguo and Huang Ju, who have taken these reforms to other localities in China as leaders of the central government since the 1990s.¹⁰⁰ It is in this context that China’s NOCs have begun the path to privatization. China’s NOC oilfields and refineries have practiced this form of bottom-up privatization, with the proliferation of new property forms occurring across them in the 1990s. The result has been the discovery of thousands of “collective” forms of property on the books of CNPC, Sinopec and even CNOOC as they began to conduct audits in preparation of

⁹⁹ For a discussion of the role of networks across generations of Chinese leaders, by one of Hong Kong’s most “well-connected” political affairs journalists, see Willy Wo-Lap Lam, *Chinese Politics in the Hu Jintao Era: New Leaders, New Challenges*, Armonk, New York: M.E. Sharpe (2006); and for more systematic studies of the Central Committee, revealing the increasingly large role played by “factions” representing local government interests see Zhiyue Bo, “The Institutionalization of Elite Management in China.” in Barry J. Naughton and Dali Yang, eds., *Holding China Together: Diversity and National Integration in the Post-Deng Era*. Cambridge, UK: Cambridge University Press (2004): 70-100, and also Zhiyue Bo, “The 16th Central Committee of the Chinese Communist Party: formal institutions and factional groups,” *Journal of Contemporary China* 13, no. 39 (2004): 223-256, and Zhiyue Bo, *Chinese Provincial Leaders: Economic Performance and Political Mobility Since 1949*. Armonk, New York: M.E. Sharpe (2002), and Cheng Li, “Political Localism Versus Institutional Restraints: Elite Recruitment in the Jiang Era.” in Barry J. Naughton and Dali Yang, eds., *Holding China Together: Diversity and National Integration in the Post-Deng Era*. Cambridge, UK: Cambridge University Press (2004): 29-69.

¹⁰⁰ For the agenda-setting role of local-level privatization experiments and economic development zones in the privatization of China’s post-Mao planned economy, see Steven W. Lewis, “Testing General Theories of Change in Property Rights: Privatization Experiments and Economic Development Zones in China.” unpublished dissertation manuscript, Washington University in St. Louis (1996); and for studies of these reforms across a range of localities and economic sectors see also Andrew Walder and Jean C. Oi, eds. *Property Rights and Economic Reform in China*. Stanford, California: Stanford University Press (1999).

issuing their IPOs on Hong Kong and New York capital markets at the end of the 1990s.¹⁰¹

The restructuring of the oil and gas sector into three companies in 1998 created three integrated corporations, but left them with near-exclusive production and distribution rights in various parts of the country and offshore. The restructuring also formalized the many privatization experiments that had occurred across the oilfields and refineries of the subsidiaries.¹⁰² The 1998 restructuring also acknowledged geographical distinctions between the three firms; CNPC and PetroChina operate in the North, Northeast and Northwest, Sinopec in the Central, East and Southeast, and CNOOC offshore. Although not economically feasible -- and under WTO accession rules not economically sustainable after 2005 -- such an institutional arrangement was a compromise intended to maintain the domination of the various component oilfields and refinery administrations within their respective corporate hierarchies, and CCP direct administrative control over them. Decentralization has merely re-strengthened the authority of component departments and of their economic partners, the local governments, and prevented the establishment of strong, formal ownership and regulatory authority at the national level.¹⁰³

¹⁰¹ See Steven W. Lewis "Privatizing China's State Owned-Oil Companies." paper prepared as part of "China and Long-Range Asian Energy Security: An Analysis of the Political, Economic and Technological Factors Shaping Asian Energy Markets," sponsored by the Center in International Political Economy and the James A. Baker III Institute for Public Policy, Rice University. (1999).

¹⁰² According to interview with advisors to the NOCs and the central government at the time, both CNPC and Sinopec presented plans to the State Council designed to subsume each other within their own corporate hierarchies, and as well to merge CNOOC and its offshore fields into the resulting very large NOC. Central government leaders reportedly responded by asking each to prepare plans to swap assets in order to become equivalent vertically integrated oil and gas companies. See the gazettes of the central NOCs for this period in the late 1990s: 中国石油化工总公司年间 (*Annual Yearbook of Sinopec*) and 中国石油天然气总公司年间 (*Annual Yearbook of CNPC*).

¹⁰³ For a recent study of the formation of China's decentralized energy sector in general see Andrews-Speed, Philip. *Energy Policy and Regulation in the People's Republic of China*. The Hague, Netherlands

This path of institutional change has created enormous institutional obstacles for the successful vertical integration of China's oil and gas companies, making it difficult to restructure according to product lines, to standardize training, employment and management practices across subsidiaries, and even to develop the large pipeline projects that must unite the plans of far-flung oilfields, refineries and local governments. CNPC, Sinopec and the central government hope to develop oil and gas pipelines to bring oil from Kazakhstan, Russia and Xinjiang to Northeast China, and gas from Xinjiang's Tarim Basin, several thousand kilometers eastward to Shanghai in East China. But as these companies have not yet even successfully unified their component oilfields and refinery administrations, much less addressed how to unite for the first time the development plans and regulatory authority of dozens of provincial and municipal governments with the investments of many multi-national corporations, the successful construction, operation and maintenance of all of these pipelines will be difficult to achieve in the near future.¹⁰⁴

(2004); for a discussion of the gradual integration of individual oilfields and refineries in China's localities within a Ministry of Petroleum underneath the State Planning Commission and State Economic Commission of the 1970s and 1980s, see Kenneth Lieberthal and Michel Oksenberg, *Policy Making in China: Leaders, Structures and Processes*. Princeton, New Jersey: Princeton University Press (1988); for a discussion of the various state agencies currently playing a role in national energy policy formation see U.S. Department of Energy. "Energy Policy Act 2005: Section 1837: National Security Review of International Energy Requirements" Washington DC: February 2006; for a discussion of the role of ad hoc and long-term leadership groups, and the officials who constitute them, in Party and central government energy policy formation, and of the role of the Energy Leading Group and the State Energy Office under the National Development and Reform Commission in particular, see Downs, Erica S., "Energy Security Series: China." The Brookings Foreign Policy Studies, December 2006; for a discussion of the interaction of government academic think tanks, state-owned media and energy policy agency officials see Erica S. Downs, "The Chinese Energy Security Debate," *China Quarterly* 177 (2004): 21-41

¹⁰⁴ For a discussion of how subsidiary oilfield administrations and large refineries within CNPC and Sinopec have opposed the centralization efforts of corporate headquarters and central government leaders on such issues as pricing, privatization and personnel appointments, see Kun-Chin Lin, "Embedding Socialist Firms as a Statist Project: Restructuring the Chinese Oil Industry, 1997-2002." *Enterprise and Society* 7, no. 1 (2006): 59-97; and for studies of Daqing and Yanhua in particular, see also Jin Zhang, *Catch-up and Competitiveness in China: The case of large firms in the oil industry*, London: Routledge-Curzon (2004).

The problems of decentralized economic planning and growth have been exacerbated by the semi-privatization of these companies through the listing of ADRs on foreign stock exchanges. The central government and the headquarters of these companies have attempted to “peel off” the “non-core” departments of these companies (including education, medical, transportation, research and design services), furloughing millions of employees and putting them into the hands of social security systems maintained by local governments. They hope that “leaner” and more efficient “core” components can then be turned over to the administration of the newly-formed, privatized subsidiaries. Local governments, often the original investors in these component oilfields and refineries, do not receive assets from these privatizations, but they must bear the cost of the downsizing. And unlike many decentralized fiscal and political systems, China’s planned economy does not provide natural resource royalties to local governments. Not surprisingly, therefore, China’s decentralization has resulted in increased competition and conflict between local government and central government, and between corporate headquarters and local departments and subsidiaries.

On the political level, all levels of government and the state-owned enterprises are facing increasing pressure to pay for the costs of establishing a national social welfare system and also to pay the costs of cleaning up industrial pollution. With privatization, stakeholders in China, as in other countries with privatizing NOCs, gain the incentive to sue the new corporations to recoup these costs. In times of rising oil prices and windfall revenues from taxes on the NOCs and on consumers, CNPC, Sinopec and CNOOC may be viewed by central government social welfare agencies and local governments, as cash cows for further reforms. According to estimates by the Chinese energy industry media,

CNPC's profits in 2005 were 133.4 billion RMB, with special taxes paid to the central government at 20.5 billion RMB. Similar estimates for Sinopec at 39.6 billion RMB and 5.04 billion RMB, and CNOOC at 25.3 billion RMB and 3.08 billion RMB.¹⁰⁵ Such profits represent about 2 percent of GDP, but about 25 percent of total revenue from the central owned SOEs.¹⁰⁶

As a result, CNPC, Sinopec and CNOOC face considerable institutional obstacles to successful privatization and preparation for competition with the multi-national integrated oil and gas majors, as there are as yet few established legal institutions to resolve conflicts between government agencies and enterprises, and between and among central and local governments. The maintenance of the nomenklatura system of Party control over appointments to the judiciaries is an additional obstacle to the establishment of independent regulatory authorities and privatized state enterprises.

III.B THE NOMENKLATURA SYSTEM OF PARTY CONTROL AND THE CORPORATIZATION PROBLEMS FOR CHINESE NOCs

Although much has been made recently in the popular press and in political debates of the ability of Chinese national oil companies to acquire the assets of Western and multi-national oil and gas companies, the CNOOC and Unocal case is not indicative of the general ability of Chinese national oil companies overall to compete with most

¹⁰⁵ See cites in 中国石油石化 (*China Petroleum and Petrochemical*) 2006.

¹⁰⁶ For a recent macro-economic study of the sources of China's economic growth, including a discussion of the role of state owned enterprises, see Nicholas Lardy, "China: Toward a Consumption-Driven Growth Path," Policy Briefs in International Economics, No. PB06-6, Washington, DC: Institute for International Economics (October 2006).

multi-national oil and gas companies.¹⁰⁷ By many measures of corporatization, CNOOC is certainly the most professional and international of the three Chinese national oil companies.¹⁰⁸ It has a chief executive trained and educated in Western business administration. It has a board of directors and advisors drawn from outside of China and outside the energy industry, and it has lower-level managers and executives with experience working in private companies in Hong Kong, the United States, Europe and other international work environments. A determination of its actual degree of direct control by the central government and the Communist Party through the nomenklatura system of cadre appointments remains to be conducted, but structurally these measures of professionalization suggest that it is the most corporatized of the three oil and gas companies.

However, it is important to note that CNOOC was designed to have this structure from the very beginning in the late 1970s, as a state corporation that could develop joint ventures with foreign companies to explore offshore oil and gas assets. CNOOC thus has fewer of the long-term institutional obstacles – including the enormous social sector subsidiaries of oil fields and refineries, and the very large workforces – that have thus far constrained the privatization and corporatization of CNPC and Sinopec. Moreover, as a state corporation with the seemingly exclusive right to engage in offshore oil and gas exploration and production in a state controlled system lacking the provision of royalties to local governments, CNOOC has thus far not had to deal with many of the conflicts

¹⁰⁷ For a U.S. government-sponsored analysis of the issues involved, see Dick K. Nanto, et al. “China and the CNOOC Bid for Unocal : Issues for Congress.” Washington DC: Congressional Research Service (September 15, 2005).

¹⁰⁸ CNOOC clearly models itself after the IOCs in presenting itself to potential investors as a responsible corporate citizen; for example see the discussion of its social obligations in its 2005 Social Responsibility Report, on the CNOOC Ltd. website: <http://www.cnooc.com/pdf/CNOOC%20social%20responsibility%20report%202005-e.pdf> last accessed February 2007.

over unemployment and environmental cleanup faced by the much larger CNPC and Sinopec in their dealings with local governments. Overall, then, the problems of CNOOC as it corporatizes and enters the global economy are not reflective of the many long-term institutional obstacles faced by the bulk of the Chinese energy industry.

The Chinese NOCs are struggling to adjust to the gradual structural marketization of the Chinese energy economy. They face many pressures including the push to privatization, the growing sophistication of increasingly important individual Chinese investors, and the demands from capital markets for forms of organization that will cater to investors' requirements. The appearance of a private energy company in spring and summer 2005, with approval from the central government to raise capital overseas and to receive oil import quotas much as the major national oil companies, is a sign that the national oil companies will face continued pressure to corporatize. Through its approval, the central government seems to be recognizing the inability of the national oil companies to work with local governments to resolve energy distribution needs. This particular company, China Great Wall Petroleum, is the offspring of an informal association, self-labeled the China Chamber of Commerce for the Petroleum Industry. The company marshals the organizational resources of provincial and municipal-level oil and gas companies, particularly in the downstream sector. Such corporations are the product of strong decentralization policies that have been growing in the oil and gas industry since the early 1990s.¹⁰⁹ These same tendencies presented serious obstacles to

¹⁰⁹ See Kun-Chin Lin. "The Nexus of State-Owned Enterprises and the Local State: Origins and Pressure Points During Privatization," Presentation at Investment in China's Local Energy Infrastructure, James A. Baker III Institute for Public Policy, Rice University, Houston, USA (April 11, 2005); and also Steven W. Lewis, "Privatization Best Practices and Comparisons: Case Study Petrobras," published as part of *Brazilian Energy Sector Reform*. Energy Forum of the Baker Institute for Public Policy at Rice University (February 2004).

the construction of the West-East Gas Pipeline and are likely to continue to play a role in its management and development.¹¹⁰

In order to assess the impact of these private companies on the ability of the Chinese national oil companies to develop China's energy infrastructure, future comparative research on NOCs from marketizing planned economies and one-party political systems should focus on the corporatization of these national oil companies and the potential establishment of nomenklatura control over all private companies and "associations."

Does the central committee of the Communist Party retain appointment approval authority over the management of the national oil companies and their subsidiary units? The control over the latter is particularly important to explore, because some of these individual oil field and refinery administrations are themselves of high ranking in the nomenklatura bureaucracy. According to the history of nomenklatura systems, the means by which Communist Party leaders directly control the appointment of leaders of government agencies, military units, political representative bodies, state enterprises and mass organizations, many planned economies (including the Soviet Union and the Peoples Republic of China), turned these appointment authority powers over to provincial and municipal party committees during the early periods of reform in the 1980s. In China's case, however, the Central Committee reversed the decentralization trend after the Tiananmen Square Protests in 1989, but only in certain sectors and parts of the Chinese government and industry. As a comparison of the nomenklatura lists from the 1980s and late 1990s reveals, the trend since the beginning of the 1990s has been to

¹¹⁰ See Arthur Jiantao Yan, "China's Localities, State Energy Companies, and the Development of the West-East Gas Pipeline." Presentation at Investment in China's Local Energy Infrastructure, James A. Baker III Institute for Public Policy, Rice University, Houston, USA, April 11, 2005.

recentralize direct approval authority in key or strategic industries.¹¹¹ Research in this area is particularly problematic, because materials on these internal Party appointments and personnel systems may be considered “state” secrets.

The fact that some of the largest oilfield and refinery administrations still refer to themselves in their annual gazettes, on their websites, and in industry publications advertise themselves as administrations – the Sichuan Oilfield Administration (“石油局”) is a prominent example – suggests that the nomenklatura system of Party appointments has been maintained, at least in some localities.¹¹² Long-term research in this area should focus on the circulation of professional managers across subsidiaries and component units of the national oil companies. Privatization and corporatization cannot effectively emerge until managers from different parts of these subsidiaries are able to circulate across them, and until these companies also accept outside managers and professionals.¹¹³

¹¹¹ For pioneering Western studies of the nomenklatura system in China of the late 1980s and early 1990s, see John Burns, “China’s Nomenklatura System.” *Problems of Communism* 28, no. 2 (1987): 36-51; and John Burns, “Strengthening Central CCP Control of Leadership Selection: the 1990 Nomenklatura,” *China Quarterly* (1994): 458-489; and for a study of the nomenklatura system in the late 1990s, after the large government restructuring and downsizing of 1998, see Hon S Chan, “Cadre Personnel Management in China: The Nomenklatura System, 1990-1998,” *China Quarterly* 179 (2004): 703-734; for discussions of the role of the nomenklatura system of appointments in cadre management and Party personnel issues in general see Melanie Manion, “The Cadre Management system, Post-Mao: The Appointment, Promotion, Transfer and Removal of Party and State Leaders,” *China Quarterly* 102 (1985): 203-233, and also Melanie Manion, *Retirement of Revolutionaries in China: Public Policies, Social Norms, Private Interests*, Princeton, New Jersey: Princeton University Press (1993).

¹¹² See advertisements by individual oilfield administrations in China energy industry journals, including 中国能源 (*China Energy*), 中国石油石化 (*China Petroleum and Petrochemical*), and 能源知识 (*Energy Information*); See also the gazettes of the central NOCs: 中国石油化工总公司年间 (*Annual Yearbook of Sinopec*) and 中国石油天然气总公司年间 (*Annual Yearbook of CNPC*).

¹¹³ For an examination of how the centralization of China’s financial institutions in the late 1990s and early parts of the 21st century under the Central Financial Work Commission (CFWC) failed to reestablish control over China’s rapidly growing local financial systems, see Sebastian Heilmann. “Regulatory Innovation by Leninist Means: Communist Party Supervision in China’s Financial Industry.” *China Quarterly* 181 (2005): 1-21; and for a study of how Shanghai municipal authorities established new intra-

In the long-term, the NOCs are facing competitive pressures of another form. As argued in the first section of this report, because governmental sources and foreign investment sources of capital necessary to develop China's national and international energy infrastructure may be scarce in the future, the Chinese NOCs will have to compete with the multi-national corporations for the capital of an Asian capital market increasingly dominated by individual, including Chinese individual, investors. The question here is: will the tens of millions of Chinese professional and middle class investors of the future prefer to invest in the Chinese NOCs or their foreign counterparts? Survey research in 2004 and 2005 suggests that Chinese urban residents are skeptical of the ability of Chinese national energy companies to acquire and import overseas energy assets in particular.¹¹⁴

This in itself is perhaps one of the primary motivations of CNOOC in its bid to purchase Unocal. Through a successful merger with a foreign entity that may be viewed by the Chinese public as a successful enterprise, it could hope to gain the confidence of investors that few state enterprises enjoy in China. This type of public identification with a Chinese SOE is particularly important for CNOOC, because it does not have the many historical ties to political symbols and economic development campaigns that the large oilfields of CNPC and Sinopec hold. All Chinese know Daqing, and many may know

Party and intra-government oversight institutions to manage the local financial industry, see Sebastian Heilmann. "Policy-Making and Political Supervision in Shanghai's Financial Industry," *Journal of Contemporary China* 14, no. 45 (2005): 643-668;

¹¹⁴ See Victor Yue Yuan, "Chinese Residents' Perceptions of Environment and Energy," published full research report presented at Energy and Environmental Awareness in China, an international workshop co-sponsored by the James A. Baker III Institute for Public Policy and UFJ Research at Rice University (June 30, 2004).

Shengli, but the achievements of CNOOC most likely are, quite literally, offshore and out of view in the minds of the Chinese public.¹¹⁵

In Brazil, the proposed sale of shares by Petrobras to foreign investors, and the proposed merger of assets with multi-nationals, generated popular protest and discussions of economic nationalism. In China, however, many tens of millions of people have worked for foreign-invested enterprises for more than a decade, particularly in the coastal areas. And in China's largest coastal cities, millions of urbanites have participated in the constrained domestic capital markets for almost twenty years. In short, many Chinese investors are most likely accustomed to the idea of foreign participation in China's industrial organizations, and they are most likely concerned about the ability of these companies to compete with foreign companies for the management of their individual capital. The recent proliferation of Chinese "energy investment" experts – who can provide analysis of the performance of China's oil and gas companies directed toward the needs of the individual Chinese investor -- suggests that a market for energy economy information services is gradually emerging.¹¹⁶ As this trend continues, the pressure on national oil companies to corporatize will increase.

IV. CHINA'S NOCs AND THE "GOING ABROAD" STRATEGY

¹¹⁵ Given the incremental and bottom-up development of Chinese state-owned enterprises, however, even CNOOC has historical ties to local governments, many of whom worked with exploration units of the Ministry of Geology, the Chinese military, the northern oilfield administrations that later came to be CNPC and Sinopec, and the IOCs, in order to find and develop fields close to the shore of Guangdong province and what would later become Hainan Province, in South China; see the many accounts of the development of individual blocks in the South China Sea in *南海西部石油公司志* (Gazette of the Nanhai Xibu Oil Company) (1988).

¹¹⁶ Here even the state-controlled media are competing with other Chinese state-owned enterprises, including the NOCs. When CNOOC made its bid for Unocal, Xinhua Financial News Wire commentators in Hong Kong expressed doubts about the economic viability of such a merger.

How have the domestic political, economic and social factors discussed in the previous sections shaped the strategies and plans of NOC leaders and Chinese government officials as they face the dilemma of using these state owned enterprises in order to meet increasing demand for oil and other hydrocarbon resources in order to sustain and even accelerate China's economic development? Can the leaders of CNPC, Sinopec and CNOOC maintain the benefits of their unique position in China's decentralized and yet marketizing planned economy, and simultaneously go overseas and compete with other NOCs and the IOCs in order to bring back to China and to world markets scarce oil and gas resources? Can China's government leaders maintain control over these three large and historically autonomous state owned enterprises in order to address the future needs of the domestic economy and implement their plans for a comprehensive national social welfare system, and at the same time assist the NOCs in bringing back to China low-cost, and secure supplies of oil and gas? A complete examination of the future role of China's NOCs in world energy markets must attempt to answer all of these salient questions, but as an important first step in comparing their role in China's foreign relations to that of the other NOCs in case studies, I present evidence here that suggests that China's NOCs and the central and local governments are capable of working together on some "going abroad" strategy goals, and yet constrained by their inability to work together on the resolution of critical domestic economic and political policy issues. As some of the discussion in previous sections has already indicated, China's NOCs have largely been successful in going overseas – most importantly in Southeast Asia, Africa and Central Asia – and in particular where their commercial interests intersect with the political interests of China's central government.

IV.A WHY ARE CHINESE ENTERPRISES “GOING ABROAD?”

To understand the outward behavior of China’s national oil companies, we first must consider China’s energy needs in the context of Asia’s energy needs. Approximately 20 percent of the world’s energy is consumed in China, Japan and the Republic of Korea, with these economies expected to generate one third of the increase in world energy demand in this period.¹¹⁷ The OECD and the IEA estimate that some \$16 trillion will be required to develop energy supply infrastructure worldwide, with this representing some three to four percent of world GDP on an annual basis, according to the WEC. The energy infrastructure development needs of Northeast Asia are expected to require one fourth of this growth (US \$4.3 trillion). Who will finance this investment, and in what areas of the world, and how will they do so?¹¹⁸

China is but one region attempting to attract foreign direct investment for energy sector development. Other countries and regions, particularly China’s neighbors, Russia and India, have enormous energy sector development needs. According to the OECD estimates, Russia’s energy sector will require some \$550 billion to \$700 billion from 2001 to 2020, with some \$200 billion alone to develop the oil fields of Russia’s Far East and Siberia. Russia’s ability to develop its energy infrastructure is largely dependent on state tax policies to motivate Russian companies to spend more on developing these resources themselves, and changes in legal frameworks to induce Russian companies and

¹¹⁷ Mehmet Ogutcu, “Energy-Investment-Regional Development: China and International Perspectives,” July 14, 2005.

¹¹⁸ Ibid.

foreign companies to jointly develop these assets. In all, Russia will require a doubling or tripling of current investment level.¹¹⁹

Although lacking significant domestic oil and gas reserves in comparison with Russia, India's energy needs over the next three decades are as strong as China's and as problematic as Russia's. India's energy needs are expected to double by 2020. It will need to import crude oil at nearly three times present levels, putting strong pressure on the country's trade and financial system, as these imports could represent as much as the total current foreign exchange reserves.¹²⁰

China's rapid economic growth will require a large share of the world's energy resources, but it will also require a large share of capital investment in order to develop its energy infrastructure. Chinese leaders, particularly at the local level, are acutely aware of the rising cost of importing these energy resources. Less clear, however, is their awareness of the increasing competition for the capital resources necessary to develop the domestic energy infrastructure. Chinese leaders, again particularly at the local level and in East China, have been enormously successful in attracting foreign direct investment toward the manufacturing and real estate sectors, especially from overseas Chinese populations and from investors in Hong Kong and the Chinese diaspora. Their model of small-scale, export-led industrial development, facilitated by a decentralized fiscal system of economic development zones, has become the new model for the rapid economic development of countries with predominantly agrarian populations integrating into the global economy.

¹¹⁹ Ibid.

¹²⁰ Mehmet Ogutcu, "Energy-Investment-Regional Development: China and International Perspectives," July 14, 2005.

India's recent attempts to establish local economic development zones based on the Chinese model is indicative of the success of China's economic policies as a model for development in the last few decades. Although successful in attracting foreign investment for manufacturing, however, China's local governments have not been as successful in attracting investment toward energy infrastructure development.

The varied success of local governments in attracting investment in energy projects is also likely varied across regions and localities in China. Overall, the IEA estimates that 20 percent of total incremental energy demand, 50 percent of coal, 16 percent of oil and six percent of natural gas demand will come from China. This will build upon some \$400 billion in new investment from 1983 to 2001. This investment has not been even, however, with some 88 percent of total FDI going to East China, some nine percent to Central China, and a mere three percent to Western China.¹²¹ Or, in other words, some local governments in China are very experienced in working with foreign investors and some not at all. Because the coastal regions of Eastern China represent the greatest future demand for energy resources, and the less populated regions of Western China represent the greatest potential future domestic source of energy resources – especially gas and oil, but also hydro-electric – there are significant political costs for coordination and cooperation just among the regions of China as they attempt to develop a national energy infrastructure to move domestic fuels to domestic economic hot spots.

The many negotiations between local and central governmental and corporate actors in the routing and construction of the West-East Gas Pipeline in recent years are an

¹²¹ Mehmet Ogutcu, "Energy-Investment-Regional Development: China and International Perspectives," July 14, 2005.

excellent case study of these problems of coordination and cooperation.¹²² The complexity of foreign participation in China's domestic energy infrastructure presents even more costs, and the complexity of integrating China's energy infrastructure into a regional and global economy makes coordination and cooperation even more problematic.

In this context of decentralization and under-investment by central government authorities, the Chinese NOCs and local governments are the de facto developers of China's domestic energy infrastructure. As discussed in the first section of this paper, all three of the NOCs have participated in the internationalization of the Chinese energy industry, including acquiring assets overseas, and forming domestic and international joint ventures with IOCs and NOCs too numerous to mention here. With increasing competition from Chinese enterprises in world trade following its accession to WTO in 2001, and in particular facing increasing competition for natural resources, the "going abroad" strategies and actions of the NOCs have sparked the growth of a cottage industry of speculation by Western scholars about their motives, intentions and position within Beijing's foreign policy establishment.¹²³ Studies have focused on the implications for

¹²² Arthur Jiantao Yan, "China's Localities, State Energy Companies, and the Development of the West-East Gas Pipeline," April 11, 2005.

¹²³ For an informative recent study of China's thirst for natural resources in general, see Tamara Trinh, "China's Commodity Hunger: Implications for Africa and Latin America" Deutsche Bank Research, June 13, 2006; available at [<http://www.dbresearch.com>] as of November 20, 2006; for a very useful study of the history of China's energy relations up to the 1980s, see Kim Woodard, *The International Energy Relations of China*, Stanford, California: Stanford University Press (1980); for recent general studies taking up these questions about the role of the NOCs in China's foreign policy, see Kenneth Lieberthal and Mikal Herberg, "China's Search for Energy Security: Implications for U.S. Policy." *National Bureau of Asian Research Analysis* 17, no. 1 (2006); and Daniel Yergin, "Ensuring Energy Security," *Foreign Affairs* (March/April 2006): 69-82; and Erica S. Downs, "Energy Security Series: China," *The Brookings Foreign Policy Studies*, December 2006; and Robert E. Ebel, *China's Energy Future: The Middle Kingdom Seeks its Place in the Sun.*, Washington DC: Center for Strategic and International Studies Press (2005); and Eurasia group. "China's overseas investments in oil and gas production" report prepared for the US-China Economic and Security Review Commission, October 16, 2006, New York: Eurasia Group; and Phillip C. Saunders, "China's Global Activism: Strategy, Drivers, and Tools," Institute for National Strategic Studies

military and naval strategies of the United States and other OECD countries.¹²⁴ Others have examined the effects the NOCs will have on international and bilateral relations between China and countries in the various regions of the globe.¹²⁵ From these many studies, it is tempting to conclude that China's NOCs are simply the advance guard of

Occasional Paper 4, October 2006, Washington DC: National Defense University Press; and U.S. Department of Energy, "Energy Policy Act 2005: Section 1837: National Security Review of International Energy Requirements" February 2006, Washington DC; and Arthur Jiantao Yan, "Why China 'Goes Global' and Its Implications," paper prepared for Meeting Asian Energy Demand: How Much and From Where, annual conference of the International Research Center for Energy and Economic Development, April 2006; and Vahan Zanoian, "Energy Security and the New Role of NOCs: An Asia-Middle East Perspective" PFC Energy, presentation prepared for Enriching the Middle East's Economic Future, sponsored by Ministry of Foreign Affairs of Qatar and the UCLA Burke Center for International Relations, Doha: January 2006, and Daojiong Zha, "Energy Interdependence" *China Security*, publication of the World Security Institute China Program, Summer 2006; Washington DC (2006): 2-16; and Daojiong Zha, "China's Energy Security: Domestic and International Issues," *Survival* 48, no. 1 (2006): 179-190; and David Zweig and Jianhai Bi, "China's Global Hunt for Energy" *Foreign Affairs*, 84:5, September/October 2005; and for an early study of the role of the Chinese NOCs in facilitating bilateral energy relations with oil-producing nations, see Amy Myers Jaffe and Steven W. Lewis, "China's Oil Diplomacy" *Survival* 44, no. 1 (2002).

¹²⁴ On defense policy and military strategy, see American Enterprise Institute and Institute for National Strategic Studies of National Defense University, "China in Asia Seminar Series," Washington DC (2005); and Camden Conference, "Highlights from the 19th Annual Camden Conference," proceedings from a conference, Camden, Maine (February 24-26, 2006); and Aspen Institute, "US-China Relations," Congressional Program 21, no. 3 (April 9-15, 2006); and Thomas J. Christensen, "Fostering Stability or Creating a Monster? The Rise of China and U.S. Policy toward East Asia." *International Security* 31, no. 1 (2006): 81-126; and Erica S. Downs, "China's Role in the World: Is China a Responsible Shareholder?" Statement before the U.S.-China Economic and Security Review Commission, August 4, 2006; and Rosemary Foot, "Chinese Strategies in a US-Hegemonic Global Order: Accommodating and Hedging," *International Affairs* 81, no. 1 (2006): 77-94; and Aaron L. Friedberg, "'Going Out': China's Pursuit of Natural Resources and Implications for China's Grand Strategy," National Bureau of Asian Research (NBR) Analysis 17, no. 3 (2006); and National Bureau of Asian Research, Pacific Northwest Center for Global Security and the National Defense University, "China's Search for Energy Security and Implications for the U.S.," Proceedings of a conference, Washington DC (September 27-28, 2005).

¹²⁵ On relations with Gulf states in particular, see Gaafar Karrar Ahmed, "Towards a Sino-Arab Partnership in the Energy Sector, The Sino-Arab Relations in the Gas Sector: The Current Situation and Challenges," paper prepared for International Energy Security and Cooperation, an international conference co-sponsored by the Shanghai Institute for International Studies and the Bahrain Center for Studies and Research, Shanghai, China (June 2004), and Gaafar Karrar Ahmed, "Relations Between China and Arab Gulf States in the Oil Sector: The Present Situation and the Challenges," paper presented at the World Forum on China Studies, an international conference Co-sponsored by the Shanghai Academy of Social Sciences and the Shanghai Municipal Government, Shanghai (August 20-21, 2004); on relations with Central Asia, see for example, Stephen J. Blank, "The Eurasian Energy Triangle: China, Russia, and the Central Asian States," *The Brown Journal of World Affairs* XII, No. 11 (2006): 53-68; and Janet Xuanli Liao, "A Silk Road for Oil: Sino-Kazakh Energy Diplomacy," *The Brown Journal of World Affairs* XII, No. 11 (2006): 39-52; and on relations with Latin America, see for example, June Teufel Dreyer, "From China With Love: P.R.C. Overtures in Latin America," *The Brown Journal of World Affairs* XII, No. 11 (2006): 85-102; on relations with Africa see Joshua Eisenman and Joshua Kurlantzick, "China's Africa Strategy," *Current History* (May 2006): 219-224; and on relations with SE Asia, see David I. Steinberg, "China's Burma Connection," *The Brown Journal of World Affairs* XII, No. 11 (2006): 69-74.

China's foreign policy, but research on the agenda-setting role of local governments in foreign policy formation¹²⁶ and original sources on the role that individual oilfield administrations have played in establishing joint ventures with NOCs in Sudan and South America suggest that if Beijing is working closely and systematically with the three NOCs, then it must be a very recent development.¹²⁷

It is far more likely that the situation overseas is more complex, with the central government able to work closely with the NOCs in the areas where the companies have long-standing relations through subsidiaries – as in Sudan or parts of South America – or where the central government has other resources that it can use to facilitate new deals benefiting the NOCs and their “going abroad” strategies. These resources might include bringing the negotiations over hydrocarbons into broader strategic bilateral dialogues with states eager to work with Beijing to recognize the PRC instead of Taiwan in international organizations, to recognize the PRC as a market economy in WTO deliberations, to combat terrorism that threatens China and its neighbors, and other salient foreign policy issues, or to serve as customers for other Chinese products by state owned enterprises, including military sales and media. These resources that the central government can bring to the table might, as in Africa's case, also include decades of warm relations – including development aid, education programs and technology

¹²⁶ See Zhimin Chen, “Coastal Provinces and China's Foreign Policy Making,” Yufan Hao and Lin Su., eds. *China's Foreign Policy Making: Societal Force and Chinese American Policy*. Hampshire, England: Ashgate (2005): 187-208; and Peter T.Y. Cheng and James T.H. Tang, “The External Relations of China's Provinces,” in David J. Lampton, ed. *The Making of Chinese Foreign and Security Policy in the Era of Reform, 1978-2000*, Stanford, California: Stanford University Press (2001): 91-122; and David M. Lampton, “China's Foreign and National Security Policy-Making Process: Is it Changing and Does it Matter?” in David J. Lampton, ed. *The Making of Chinese Foreign and Security Policy in the Era of Reform, 1978-2000*. Stanford, California: Stanford University Press (2001): 1-38; and Margaret Pearson, “The Case of China's Accession to GATT/WTO.” in David J. Lampton, ed., *The Making of Chinese Foreign and Security Policy in the Era of Reform, 1978-2000*, Stanford, California: Stanford University Press (2001): 337-370.

¹²⁷ See for example the institutional histories of the Zhongyuan Oilfield Administration in Sudan, or of Shengli in South America.

transfers – between the PRC and nations who have viewed China as an emerging power with whom they do not share a contentious colonial history, as they do with Europe, America and Japan.

Finally, as case studies and surveys of the internationalization of Chinese SOEs reveal, the NOCs may be going overseas for distinctly political or narrow individual economic goals. These might include asset-stripping¹²⁸ and informal privatization, and also “round-tripping” in order to enjoy the benefits of re-investment in China’s localities as a “foreign enterprise.”¹²⁹

V. CONCLUSION

Will China’s national oil companies become major players in world energy markets in the future? This study examines the domestic political, economic and social institutions that have shaped the growth of CNPC, Sinopec and CNOOC over nearly six decades of socialist economic planning in the People’s Republic of China. As the research in the first section reveals, these three NOCs are competitive with the IOCs on many basic measures of assets, production and performance. Their future role, either as

¹²⁸ See X.L. Ding, “Informal Privatization Through Internationalization: The Rise of Nomenklatura Capitalism in China’s Offshore Businesses,” *British Journal of Political Science* 30, no.1 (2000): 121-146; and X.L. Ding, “The Illicit Asset Stripping of Chinese State Firms,” *China Journal* 43 (2000): 1-28, and on corruption and the CCP in general, see Xiaobo Lu, *Cadres and Corruption: The Organizational Involvement of the Chinese Communist Party*, Stanford, California: Stanford University Press (2000).

¹²⁹ On the going overseas of Chinese enterprises in general see Andreas Lunding, “Global Champions in Waiting: Perspectives on China’s Overseas Direct Investment,” Deutsche Bank Research, August 4, 2006; Frankfurt, Germany, available at [<http://www.dbresearch.com>] as of November 20, 2006; and Russell Smyth and On Kit Tam, Malcolm Warner, Cherrie Jihua Zhu, eds. *China’s Business Reforms: Institutional Challenges in a Globalized Economy*, London: Routledge (2005); and Henry Wai-chung Yeung, *Chinese Capitalism in a Global Era: Towards Hybrid Capitalism*, London: Routledge (2004); and for an example of one successful company in particular, see Jeannie Jinsheng Yi and Shawn Xie Ye, *The Haier Way: The Making of a Chinese Business Leader and a Global Brand*, Dumont, New Jersey: Homa & Sekey Books (2003); and on surveys of Chinese enterprises going overseas, see Asia Pacific Foundation of Canada and China Council for the Promotion of International Trade, “China Goes Global: A Survey of Chinese Companies Outward Direct Investment Intentions,” Vancouver, Canada: Asia Pacific Foundation of Canada (September 2005); and on round-tripping see William Hess, “China: Going Outside, Round-Tripping and Dollar Diplomacy: An Introduction to Chinese Outward Investment,” Global Insight, available at [<http://www.globalinsight.com/>] as of November 20, 2006.

developers of China's national energy infrastructure, or as developers of foreign sources of oil and gas, is, however, constrained by a history of decentralized institutional growth, both within these large state owned enterprises, and within the government agencies that own and regulate their activities. These relationships reflect a strongly decentralized political and economic system in China --one that evidence presented in section three suggests will continue to produce conflict between NOC, central and local governments over the costs of privatization and liberalization of China's economic system.

Although China's NOCs have thus far produced some modest achievements in developing foreign sources of hydrocarbons and bringing them to world and Chinese markets, the results of studies presented in section four suggest that the NOCs and the Chinese central government will continue to face obstacles in reconciling their competing political and economic goals in "going abroad" and in developing strategies ties to resource-providing nations in particular. The role of Chinese NOCs in world energy markets is thus one very much in transition, with NOC commercial interests and strategies mediated by the evolving geopolitical strategies of their principal owner, the Chinese government.

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