



*The Sino-Saudi Energy Rapprochement:
Implications for US National Security*

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Executive Summary

China is set to become one of the world's largest energy importers by 2010. Saudi Arabia, the world's leader in proven oil reserves, production capacity, and net export of petroleum, will play a key role in satisfying China's growing energy needs. In addition, the Chinese are turning to the Saudi royal family as a strong and viable strategic partner. This development has broad implications for China, Saudi Arabia, and the United States.

This study provides an overview of China's current and projected energy state, evidence for increasing ties between China and Saudi Arabia, and an analysis of the impact a Sino-Saudi rapprochement will have on the US. Its main conclusions are as follows:

- ✓ Regardless of efforts to increase domestic production and diversify its energy supply, China cannot avoid increased dependence on Saudi Arabia. This dependence will spring from both direct oil imports as well as from the fact that Saudi Arabia, by virtue of its standing as the world's energy superpower, wields enormous influence on petroleum prices. In order to process Saudi oil, China will, with Saudi assistance, invest in new refining capacity and refinery upgrades enabling it to process the relatively high-sulfur petroleum from the Gulf.
- ✓ Increased energy trade will lead to growing political, military, and economic ties between China and Saudi Arabia. This relationship will be driven by energy considerations, but will be strengthened by shared policy goals. Both countries seek economic liberalization, privatization and diversification while maintaining strict governmental control of the economy. Both are resistant to US dominance in world affairs, and are sensitive to criticism over human rights issues.
- ✓ As China becomes increasingly reliant on Saudi Arabia's oil and energy policies, it will come to share the concerns of OECD countries such as the United States. Specifically, China will have a direct interest in peace in the Middle East, the stability of the Gulf region, and the security of global sea-lanes that transport the world's oil.

Overall, Chinese dependence on Saudi Arabia for its energy needs will not present any direct threat to US national interests. The US will remain an important market for Saudi oil, and as such, won't lose influence with the Kingdom. And while the US should monitor any "weapons-for-oil" deals China makes in the region, and should ensure that China does not tie bilateral issues to its energy trade, in general Chinese reliance on foreign oil will lead to its deeper integration into the global economy.

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Note: The bulk of this report was prepared before the terrorist attacks of September 11th, 2001. While this event, and the resulting US war on terrorism, does not alter our conclusions, it does highlight the importance of Saudi Arabia to US national security. Please see our memorandum, "A 21st Century Partnership: Strengthening US-Saudi Ties in the War Against Terror," for further discussion of this issue.

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Part I: China's Growing Energy Needs

For much of the past century, American economic growth fueled a spectacular rise in its energy demands. This led the United States to develop strong ties to Saudi Arabia, the world's energy superpower. Today, China is one of the world's fastest growing economies, and it too has turned its attention to world oil exporters and especially to Saudi Arabia in order to meet its energy needs.

China has achieved remarkable economic progress in the past decade. Per capita GDP has grown at an annual rate of 6-7%, substantially higher than the 2-3% average growth for developed countries. This growth has been accompanied by a corresponding growth in energy use. In 1999, China consumed an oil equivalent of 16.5 million barrels per day (mb/d) of primary energy, consisting of 69.5% coal¹, 25% oil, 2.9% natural gas, 2.1% hydropower, and 0.5% nuclear power.

Since 1979, China's oil demand has grown faster than its domestic oil production. In the last decade, oil consumption rose from 2.1 mb/d in 1990 to 3.5 mb/d in 1997 and is currently about 4.64 mb/d.² China now ranks third in the world for oil products use, after the US and Japan.

In the first six months of 2001, crude oil imports stood at 1.29 mb/d, down slightly from 1.42 mb/d in 2000. Net refined product imports stood at an estimated 417,000 barrels per day (b/d) in 1998, not including an additional 70,000 b/d to 100,000 b/d of illegally smuggled gas oil, fuel oil and other products.³

The total level of these imports is expected to grow substantially in the coming years as China's domestic oil requirements increase and its domestic oil production fails to keep pace. Depending on its rate of economic growth, China's oil use is projected to increase by between 750,000 b/d and 3 million b/d, totaling between 5.4 million b/d to 7.5 million b/d by 2010. By 2020, China's oil demand could be as high as 7 to 12 million b/d if strong economic growth continues. Should China's oil production levels remain relatively stagnant (as has been the case for several years), China's oil import levels could grow to between 2.0 mb/d and 4 mb/d over the next ten years.

Chinese oil demand could represent as much as 17-23% of total Asian oil demand and 5 to 7% of total world demand for oil by 2010, rendering China's influence on and vulnerability to international oil markets significant. Anticipation of this energy supply gap is already influencing China's foreign policy and prompting China to forge new relationships.

Chinese Demand Trends

Table 1 shows total energy consumption by China for the period 1975-1999.

Table 1
Official SSB Statistics on
Chinese Total Consumption of Energy [in Millions of Tons of Oil Equivalent (MTOE)] and
Composition (in percentages), 1975-1999

Year	Total Energy Consumption	Coal	Crude Oil	Natural Gas	Hydro-Power
1975	313.26	71.9	21.1	2.5	4.6
1980	415.38	72.2	20.7	3.1	4.0
1985	528.54	75.8	17.1	2.2	4.9
1990	681.03	76.2	16.6	2.1	5.1
1995	904.59	74.6	17.5	1.8	6.1
1996	958.41	74.7	18.0	1.8	5.5
1997	952.89	71.5	20.4	1.7	6.2
1998	912.18	69.6	21.5	2.2	6.7
1999	841.80	67.1	23.4	2.8	6.7

Note: From SSB 2000, pg. 239; Total Energy Consumption figures derived from million tons, coal equivalent, converted to Mtoe at .69. Percentages may not sum to 100 due to rounding and other factors.

Chinese energy demand from the transport sector has historically been lower than demand rates that are typical in other countries at similar levels of per capita income. In its development plans of the 1970s and 1980s, China severely restricted the production of automobiles and transport infrastructure, emphasizing the utilization of bicycles as the chief mode of personal transportation. Energy demand in the industrial and other sectors has been higher. This is not surprising since China, then a command economy, emphasized investment in heavy industry to the detriment of investment in consumer goods.

In addition, state controlled prices masked the true costs of energy inputs. Since managerial performance was not judged on the basis of commercial profitability, inefficient energy use was sustained in industrial practices. Thus, China experienced unusually high energy intensity relative to other countries of its size and level of development.

Figure 1 shows Chinese energy consumption by end use sectors: residential and commercial, transportation, and industrial and other.⁴ During this period total final energy demand increased by approximately 150%, with most of the increase coming in the industrial and transportation sectors. The growth in the industrial sector was the result of continued reliance on the build-up of heavy industry as a basis for development. The growth in the transportation sector reflected the rapid

growth, and subsequent utilization, of motor vehicle stocks which grew from 0.3 to 3.2 passenger vehicles per thousand people, an increase of almost 1000%.

Figure 1: Chinese Final Energy Consumption (1978-1995)

Source: Asian Development Bank, Energy Statistics for Developing Member Nations

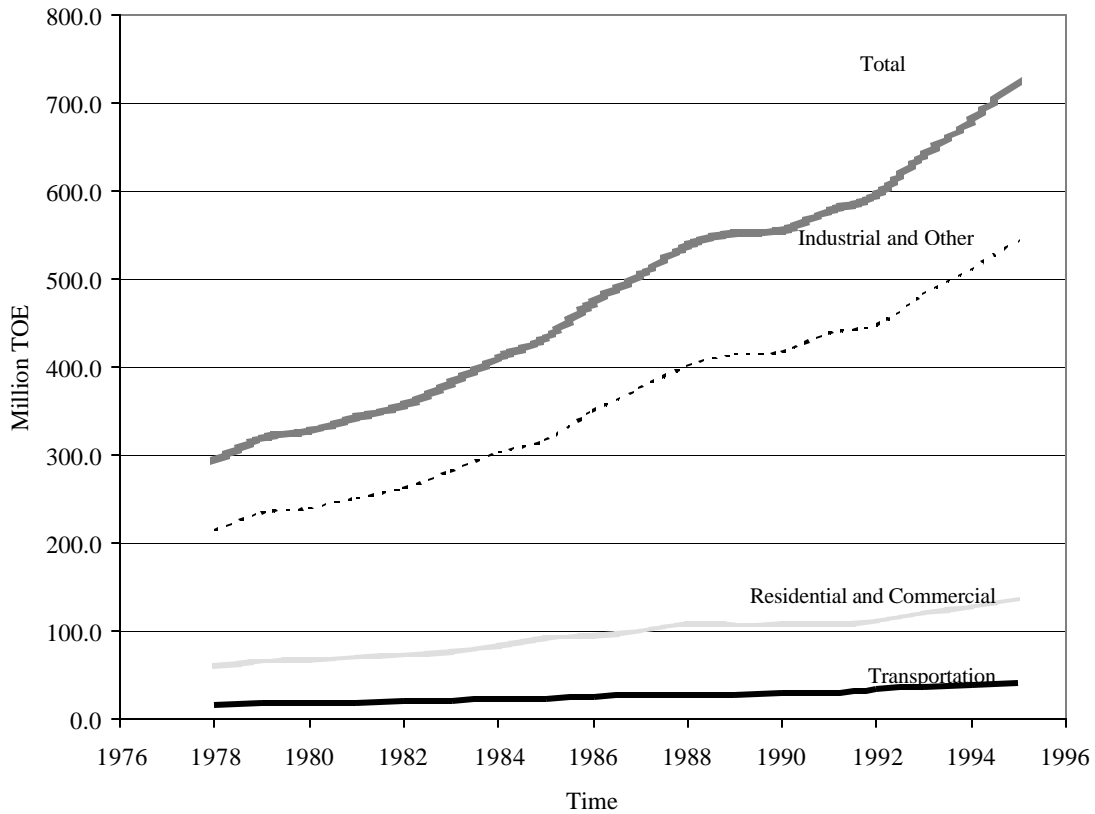


Table 2 shows forecasts of Chinese demand for energy by end-use sector under various development scenarios. Alternative assumptions about the rate of economic growth are made holding the real price of energy constant at 1995 levels. Cases include those where per capita real GDP growth averages 5.0% per annum, 2.5% per capita GDP expansion and the Department of Energy (DOE) reference case which is for 7.9% absolute real GDP growth, but, using the World Bank's projection for population expansion (0.7% per annum), calculates to 7.2% per capita growth.

Table 2
Energy Demand Forecasts for China to the Year 2020

Year	Energy Demand (a)						
	Real GDP per capita Growth (b)	Residential and Commercial	Transportation	Industrial and Other	Final	Primary (c)	DOE (d)
1995	...	136.5	42.5	544.5	723.5	915.8	...
	2.5	214.4	89.9	805.9	1110.2	1405.3	...
2010	5.0	230.4	106.4	922.1	1258.9	1593.5	...
	7.2	243.0	122.2	1035.9	1401.1	1773.5	1797.0
	2.5	240.5	102.6	901.5	1244.6	1575.4	...
2015	5.0	264.7	129.7	1092.8	1487.2	1882.5	...
	7.2	282.3	156.4	1290.6	1729.3	2189.0	2229.0
	2.5	267.7	116.2	1008.0	1391.9	1761.9	...
2020	5.0	299.8	155.9	1295.3	1751.0	2216.5	...
	7.2	320.3	196.1	1609.6	2126.0	2691.1	2764.0

Notes:

(a) Units are in Million Tons of Oil Equivalent

(b) Population is assumed to grow at 0.7% per annum. (World Bank Development Indicators, 1998)

(c) Historically, Transformation losses are around 21%. Thus, to obtain Primary, this value was assumed.⁵

(d) DOE refers to Department of Energy reference case projection for Primary Energy Consumption.

China's overall energy use is expected to derive mainly from industrial activities for the foreseeable future. At present, close to 50% of Chinese GDP originates in the industrial sector. However, residential and commercial energy use and transportation energy use will begin to account for an increasing share of total energy consumption as more and more consumers achieve higher levels of income.

Medlock and Soligo (2001) predict that motor vehicle stocks in China could grow to 30 vehicles per thousand individuals by 2015 at a per capita GDP growth rate of 5.0% per annum. With a projected population of about 1.4 billion, this amounts to a total stock of automobiles of about 42 million, an increase of about 37.5 million from their 1995 levels.⁶ Given the nature of the transportation sector, increased utilization translates into a huge increase in the demand for oil and petroleum products.

In the transportation sector, China's energy use is considerably below that of non-command economies with similar per capita income. Yet, given existing infrastructure constraints and environmental obstacles, it seems unlikely that transportation sector growth will grow as fast as it has in other countries.

In the industrial sector, China's energy use is much higher than that of non-command economies with similar per capita income. However, as the Chinese economy liberalizes, more emphasis will be placed on lowering manufacturing costs, stimulating more energy efficient processes. This will lead to a reduction in the energy intensity of production and to a downward "correction" in China's energy use per unit of GDP to bring it more closely in line with global development trends. In addition, the effect of moving from very energy intensive heavy industry to less energy intensive consumer oriented production can create, in-and-of itself, a downward correction. Nonetheless, China has had difficulty increasing efficiency in the state owned firms and closing those that are beyond improvement. These firms will continue to act as a drag on energy efficiency for some time to come, although the country's recent entry into the World Trade Organization could accelerate closures and spin-offs.

Forecasting China's Oil Demand

What do these forecasts of China's demand for total energy mean for future Chinese oil requirements? In Table 3, some forecasts for Chinese oil demand to the year 2010 and 2020 are forecast. For 2010, oil demand is estimated to be between 5.4 and 7.0 mb/d, corresponding to GDP growth rates of 3.2% and 7.9%. For 2020, demand is estimated at 6.8 - 10.9 mb/d, again for growth rates 3.2% and 7.9%. These estimates compare with DOE reference case projections of 7.0 mb/d in 2010 and 11.2 mb/d in 2020.

Table 3
Projected Chinese Oil Requirements by Sector

Table 3: Projected Chinese Oil Requirements by Sector										
	1995	2010			2015			2020		
Per capita GDP Growth Rates		2.5%	5.0%	7.2%	2.5%	5.0%	7.2%	2.5%	5.0%	7.2%
Residential and Com.										
million tons	6.39	10.03	10.78	11.37	11.25	12.39	13.21	12.53	14.03	14.99
increase of		3.63	4.38	4.97	4.85	5.99	6.81	6.13	7.63	8.59
Transportation										
million tons	26.28	55.59	65.80	75.57	63.45	80.21	96.72	71.86	96.41	121.27
increase of		29.29	39.50	49.27	37.15	53.91	70.42	45.56	70.11	94.97
Industrial and Other										
million tons	103.08	152.56	174.56	196.11	170.66	206.88	244.32	190.82	245.21	304.71
increase of		49.46	71.46	93.01	67.56	103.78	141.22	87.72	142.11	201.61
Total Final										
million tons	135.75	218.19	251.14	283.05	245.37	299.47	354.25	275.21	355.65	440.97
increase of		72.19	105.14	137.05	99.37	153.47	208.25	129.21	209.65	294.97
Primary (a)										
million tons	167.59	269.37	310.05	349.44	302.92	369.72	437.35	339.77	439.08	544.41
increase of		111.57	152.25	191.64	145.12	211.92	279.55	181.97	281.28	386.61
barrels/day (b)	3.35	5.39	6.20	6.99	6.06	7.39	8.75	6.80	8.78	10.89
increase of		2.04	2.85	3.64	2.71	4.04	5.40	3.45	5.43	7.54
Notes:										
(a) Oil losses from transformation were approximately 19% of primary requirement in 1995.										
(b) Units are in millions.										

The oil demand numbers in Table 3 presume that the fuel mix within each sector remains constant at 1995 levels. However, there is a strong possibility that China will continue to make environmentally motivated substitutions away from coal. In addition, increases in energy demand in transportation may be more broadly affected by the growth of private transportation. Both of these factors would have the effect of increasing the share of oil in total energy demand. For example, assume that the oil component in the energy mix in transportation rises from 62% to 90% by 2020. Assume further that oil that now accounts for only 4.5% in the residential/commercial sector rises to 20% and, finally, that the oil share in the energy mix of the industrial sector increases from 19% to 30%. In this case, oil demand in 2010 will be between 6.3 mb/d and 8.1 mb/d, depending on GDP growth rates, and between 11.4 mb/d and 17.9 mb/d in 2020.

On the other hand, the growth in energy demand for transportation is conditioned on the future development of complementary infrastructure and the extent to which environmental concerns are addressed. In developed countries, the existence of infrastructure serving gasoline and diesel vehicles is often cited as a barrier to the adoption and spread of vehicles powered by natural gas, LPG or fuel cells. Some municipalities in China are already pursuing policies to promote natural gas or LPG vehicles. The relative absence of such infrastructure in China could facilitate such new technologies to take hold there before doing so in more developed countries. In such a case, these higher estimates would greatly over-state the growth in demand for crude oil.

Some other forecasts for Chinese oil demand reflect such higher rates. However, official Chinese government forecasts generally reflect lower projections.

Table 4
Estimates of Chinese Oil Demand
(in millions of barrels per day)

Year	Baker Institute (1999)	IEA (1998)	APERC (1998)	SDPC (1998)	PRC State Council (1996)	SETC (2001)
2000			4.3	4.0	4.0	
2005			5.5			4.9
2010	6.2	7.1	6.8	5.7	5.2	
2015	7.4			6.8		
2020	8.8	10.1			6.4	

Note: Baker Institute figures from Medlock & Soligo 1999; IEA from IEA 2000; APERC from APERC 1998; SDPC from Gao 2000; PRC State Council from China Energy Strategy Study (2000-2050), Beijing, (in Chinese), cited in IEA 2000, pg. 47; SETC from SETC 2001.

China's Domestic Oil Sector

Total crude oil production in China now currently averages about 3.28 million barrels a day, most of which is concentrated in a small number of highly productive fields. Northeast China is the largest producing region in the country, yielding 2.214 mb/d out of 3.285 mb/d in the first half of 2001. The decline rate for this region was about 43,000 b/d in 2001.

Over 50% of China's oil output comes from just two mature and declining fields –Daqing, located in Northeast China, and Shengli, located in the Northern Shandong province. Daqing, China's largest oil field, produces about 1 million barrels a day. A small portion of this crude is exported to Japan but most of it is transported by pipeline or railcar to refineries in North and Northeast China. Some Daqing oil is shipped to the Lower Yangtze region and the southern provinces by small coastal vessels and refined there. Shengli production averages about 600,000 barrels. In 2000, Shengli production had registered declines but has made some slight recovery of about 2,000 to 4,000 b/d in early summer of 2001. About 220,000 b/d of Shengli production remains in the Shandong province for refining. The remainder is shipped by pipeline to the coast or to refineries along the Yangtze River.

Both the Daqing and Shengli fields are considered as over-drilled and are poor candidates for additional tertiary recovery schemes. Some decline in output rates is expected from both fields over the next five to ten years.

The next tier of smaller fields includes Liaohe and Xinjiang. Liaohe production averages around 300,000 b/d and is shipped mainly by pipeline to refineries in the Lower Yangtze region. The Xinjiang Uighur autonomous region in Western China has three giant crude oil basins: Tarim, Junggar and Tu-Ha. Although current output from the region is small, China believes this region could see a large boost in output from exploration and development activities, possibly to as high as one million b/d by 2010. However, such development would require massive investment, including construction of a major 4,000-kilometer pipeline to more populous East and Southeast regions. So far this year, minor growth has been seen in output in the Far Western regions of Tarim and Junggar and the provinces of Changqing (Shaanxi province), Qinghai, Yanchang, and Yumen. PetroChina has targeted Changqing and Tarim for further output increases this year. (See Appendix I for comprehensive data on Chinese oil fields and Appendix III for a map of Chinese oil fields.)

Construction of a pipeline from the Tarim area to Shanshan was completed in 1997 and plans exist to extend the line to Lanzhou and points east, with a spur to energy-short Sichuan province. Eventually the system could be extended to Shanghai and its environs.

Certain onshore exploration blocks have also been targeted for foreign investment. China began its move to open up its industry in the 1970s, originally permitting joint ventures in the southern provinces, and later expanding to other parts of the country. Offshore exploration ventures involving foreign companies are generally handled by the China National Offshore Oil Corporation

(CNOOC). CNOOC has been viewed by the international oil companies (IOCs) as fairly commercial and progressive in its dealings, and some discoveries have been made.

Western oil company activities onshore inside China have been limited mainly to smaller oilfields and to wildcat exploration. Among the companies with upstream investment in China are Exxon, Texaco, Eni, Agip, BP, Amoco, Shell, Phillips, Statoil and a number of smaller independent firms as well as Indonesian and Japanese companies. China has placed some hopes on developing the Western oilfields of the Tarim Basin but to date low oil prices and an uncertain environment for foreign investors has slowed the development of the region. PetroChina offered a licensing round for 15 oil and gas blocks in northeast China's Bohai Bay Basin in September 2000, but no commercial contracts have been signed thus far. PetroChina also plans to offer new blocks in the Erdos Basin in northwest China in late 2001.

Offshore oil production represents an expanding domain, reaching 410,000 b/d in mid-2001, up from 300,000 b/d in the late 1990s. Foreign explorers have been adding substantially to China's offshore profile in the last three years, finding more than 1 billion barrels of oil in Bohai Bay, the Pearl River Delta and the Beibu Gulf. About a third of the offshore production is sold abroad, mainly to refiners in Singapore, with the rest sent to China's southern provinces.

Recently, there have been some exploration successes by foreign oil companies in China's offshore at Bohai Bay and a joint venture between Phillips Petroleum and CNOOC has begun work on the Penglai 19-3 oil field in the northeast Bohai Sea. The reserve potential of the field is estimated at 500 to 800 million barrels of oil equivalent and production should total 35,000 b/d to 40,000 b/d by August 2002, rising to 65,000 b/d by 2005. CNOOC has said it plans to raise Bohai Sea crude output to 360,000 b/d by 2005. CNOOC is also planning to raise production at its wholly owned Suizhong 36-1 field, off China's northeast coast, to 69,000 b/d in the coming year. The field has only minimal production to date. Apache's Zhao Dong field will produce 25,000 b/d by the end of 2003. Kerr McGee and CNOOC also have a new discovery at Caofeidian.

In the South China Sea, exploration disappointments in the 1980s and 1990s are giving way to new discoveries of late. Phillip's fields in the Xiajiang recently peaked at 100,000 b/d but are declining to around 80,000 b/d. BP's Lihua field is running at around 26,000 b/d while Statoil's Lufeng is averaging 12,000 b/d. Meanwhile, the CACT consortium, comprised of Italy's Eni, Chevron and Texaco and China state-owned CNOOC, has also announced a new oil find in the South China Sea.⁷ Six fields there produce around 140,000 b/d and four more fields are under development.

The Long-term Outlook for Chinese Oil Production

Despite an opening to foreign investment, China's domestic oil production is not expected to increase substantially in the coming years. Low oil prices, ineffective price reform, massive flooding at the Daqing oil field and insufficient domestic oil transportation infrastructure combined to produce a small drop in Chinese oil output in 1998 to 3.2 mb/d. High oil prices have encouraged a slight recovery in 2000 and 2001, with output in 2001 hovering between 3.21 to 3.28 mb/d.

While some analysts continue to predict that Chinese oil production could rebound over the next ten years, there are many factors that might work against this result. They include: capital constraints within China's major industries, general ineffectiveness of oil sector corporate reforms, lack of interest among foreign investors in acreage offered for exploration, and the prospects that oil prices could remain low over the longer term.

For these and other reasons, domestic output is expected to stagnate for the next 10 years and remain close to 3.1 to 3.3 mb/d through 2010. Other forecasts range from 3.0 mb/d to 3.7 mb/d. The DOE reference case forecasts production at 3.6 mb/d.

The outlook for 2020 is not much better. The DOE forecasts 2020 production at 3.5 mb/d. This a reasonable projection given the possibility that technological improvements and efficiency gains will be made in China's energy sector over the next twenty years and could eventually arrest decline in production rates.

Table 7
Estimates of Chinese Domestic Oil Production
(in millions of barrels per day)

Year	Baker Institute (1998)	IEA (1998)	APERC (1998)	SDPC (1998)	PRC State Council (1996)	SETC (2001)
2000			3.4	3.2	3.1	3.2
2005			3.6			3.4
2010	3.3	3.1	3.9	3.8	3.3	
2015				4.1		
2020	3.5	2.1			3.6	

Note: Baker Institute figures from Medlock & Soligo 1999; IEA from IEA 2000; APERC from APERC 1998; SDPC from Gao 2000; PRC State Council from *China Energy Strategy Study (2000-2050)*, Beijing, (in Chinese), cited in IEA 2000, pg. 47; SETC in SETC 2001.

Should domestic output increase only modestly over the next two decades, Chinese imports of crude oil and petroleum products will increase steadily. Depending on which of the growth scenarios are chosen from Table 2, imports will range from 3 to 5.7 million b/d in 2010 and 3.3 to 7.4 mb/d in 2020. Using the reference case scenario of 5% GDP growth, imports would be 3.0 mb/d in 2010 and 5.2 mb/d in 2020.

China's Refining Sector: The Challenge of Meeting Regional Oil Imbalances

The refining industry in China includes over 100 refineries and petrochemical plants with a total capacity of around 5.6 mb/d, up from 3.1 mb/d in 1990. These figures do not include a large, uncounted number of very small, locally operated refineries. Worldwide, only the US and Russia have larger refining capacity than China, whose capacity is only slightly higher than Japan. Sinopec

still controls about 53% of the country's total refining capacity. The China National Petroleum Corporation (CNPC) holds another 40% with the rest controlled by local independents. Refinery runs in 2000 averaged 4.2 mb/d or about 75% of capacity utilization. In 1999, refinery runs averaged only 3.67 mb/d, about 65% of capacity. The closure of small refineries, improvements in handling sour crudes and more commercial operations have helped China utilize a greater proportion of its refining capacity and thereby hold back the increase in refined product imports.

China currently does not have the right kind of capacity to refine large amounts of the lower quality supplies that are produced in Persian Gulf countries such as Iraq, Iran, Saudi Arabia and Kuwait. This explains the relatively small amount of crude imports from these countries (see Chart 1). Without refinery upgrades, China is projected to have only a little more than 1.35 million b/d of capacity to process this lower-quality Persian Gulf oil by 2005. (Table 9)

Chart 1
Chinese oil imports from the Middle East (2000)

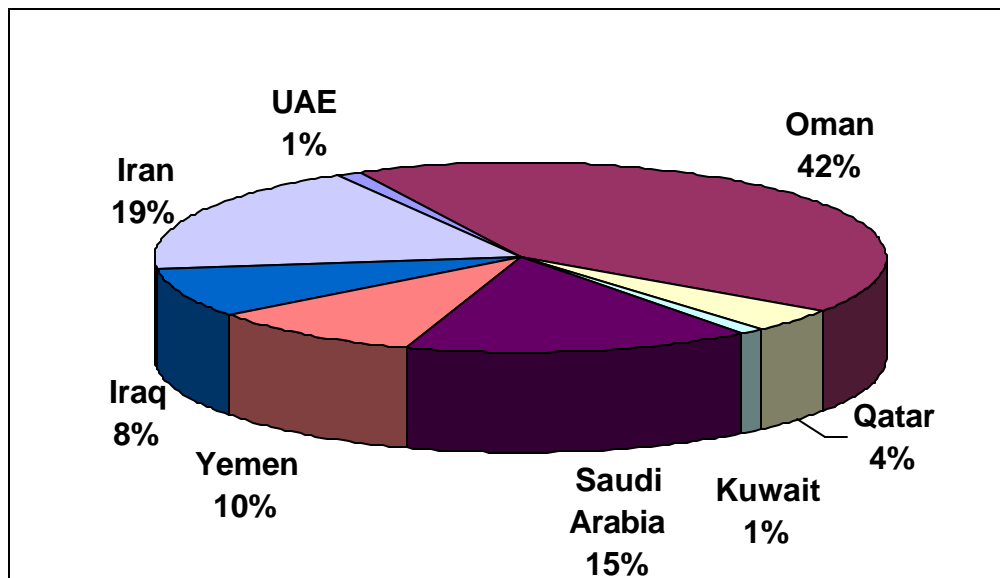


Table 9
China Refinery Capacity by Crude Tolerance (Thousands b/d)

Crude Type	1998	2002	2005
Sweet: < 0.9%S (1)	4,350	4,050	3,700
Medium Sweet: 0.9-1.15%S	160	550	750
Sour: 2%S or Higher	240	700	1,350
Total	4,750	5,300	5,800

Source: Asia Pacific Energy Consulting, 2001

Note: Chinese central government announced in early 1999 that up to 500 thousand b/d of 'illegal' refining, basically simple distillation, would be closed down by 2000. Included in the 1998 numbers are approximately 300 thousand b/d in base refining capacity that is run mainly by provincial and municipal state oil companies and have deleted that from our base capacity for the year 2000. All of this capacity ran on domestically produced waxy sweet crudes.

However, as low sulfur supplies from Yemen and Oman dry up, and challenges mount in securing oil from other sources, the Chinese can be expected to vigorously continue capacity upgrades in order to process more Persian Gulf crude. In fact, Saudi officials have shown interest in helping China upgrade its refining capacity. "If we (Saudi Arabia) are to become one of the major players in the Chinese market, we are going to have to help them increase their ability to refine sour Saudi crudes," said a senior member of the Saudi Consultative Council and a former Deputy Minister of Finance and National Economy. "Basically, Saudi Arabia is going to have to invest heavily in Chinese refining upgrades if we're to have a dominant presence in China."⁸ If these initiatives advance, China's actual sour refining capacity may be as much as 10% higher than APEC estimates.

At the same time, CNPC is looking for new sources of light, sweet crude oil for refining in China. It is hoping that crude discovered in Bohai Bay can serve as a replacement for Indonesian crude. But CNPC executives are also pursuing oil exploration contracts in North and West Africa to diversify access to lighter crude grades. CNPC sources say interest is high in developing exploration contracts in Libya, Niger, Chad and possibly Equatorial Guinea to supplement existing operations in Sudan.

Supply Options

China's expected energy dependence leaves it with tough choices. The government appears to be resisting the tendency to focus solely on increased purchases from the Middle East though its policies also acknowledge that increases in oil imports from the region will be unavoidable. Still, diversity of energy supply is considered a strategic imperative and Beijing has taken up several major initiatives to enhance its energy security.

To start, China has launched a program to diversify energy supplies by expanding natural gas resources inside the country, targeting increases for natural gas utilization from 3% currently to 8-

10% by 2015. China has ample gas resources in the Erdos, Sichuan, Tarim Basin, Junggar, and Qaidam areas as well as in the western South China Sea.

Beijing has plans to build a 4,000 kilometer pipeline linking Tarim Basin reserves with Shanghai. The project would enhance gas movements that got a boost in 1997 with the completion of a 864 kilometer line from Erdos to Beijing which currently carries 1 bcm of natural gas to the capital. The throughput of this latter pipeline is slated to increase to 3 bcm. ExxonMobil together with CLP of Hong Kong; Royal Dutch Shell with Hong Kong Oil and Gas and Russia's Gasprom and Stroitrangas are among the bidders for the \$4.8 billion Tarim to Shanghai West East line that is projected to carry as much as 1.2 to 1.9 billion cubic feet per day of gas. BP recently announced it was pulling out of bidding for the project that will require billions of dollars in infrastructure investments to be made in Shanghai to facilitate use of the gas. BP is already committed to building a LNG importing terminal in Southern China.

In an indication of the priority being given to natural gas, the central government recently brokered a deal between Sinopec and CNOOC to jointly develop the Chunxiao gas field in the Xihu Basin offshore Shanghai.

Another solution to China's increasing energy "insecurity" is to develop oil resources in Western China and to build a costly pipeline to transport this oil to east and/or southeast markets within China. The limitations of this option have been discussed above and more will be said below on the economics of transporting oil across China compared to the costs of bringing in cheaper Middle East imports to southern areas of the country.

A third option is to increase energy trade with Russia. In July 2001, Chinese leader Jiang Zemin visited Russia and signed several important agreements to pursue energy trade between the two countries. One agreement calls for the feasibility study of a 400,000 b/d oil pipeline from East Siberia to eastern China. This project would link the Chinese market to the 11 billion barrel reserves of the Yurubcheno-Takhomskaya zone currently controlled by Yukos and Slavneft. China is also discussing with Russia a major natural gas link between Irkutsk and Yakutia and Chinese markets. Three groups are competing to build a 4,000 kilometer, 1.93 billion cubic feet per day gas pipeline from Western China to Shanghai. A BP-led group is trying to develop the 1.5 trillion cubic meter Kovykta East Siberian gas field for export to China.⁹ Finally, the Sakhalin Islands represent a potential source of oil and natural gas.

China has also looked at increasing oil imports from Kazakhstan via an all-land route that could also link up with fields in the Tarim Basin on its way to the major markets. The main alternative to these proposals is to import crude by tanker. The two pipeline options develop routes that avoid the security risks associated with long supply lines by tanker that must pass through relatively narrow and congested sea lanes of the South China Sea. But since tankers offer lower transport costs than pipelines for oil, the issue becomes one of how much China is willing to pay for diversification of supply.

Transportation Costs for Caspian and Tarim Basin Supplies to Eastern China

Table 10 shows the transport costs for oil for various routes including Tarim to Guangdong. Under conservative assumptions, the cost of transporting Tarim Basin (Korla) oil to Guangdong will be around \$2.84/b, excluding right-of-way costs. This estimate assumes that there would be sufficient production at Tarim to support a large capacity pipeline of 1 million b/d. A smaller pipeline would produce higher per barrel costs. For example, a 30 inch, 500,000 b/d pipeline would increase transport costs to \$4.48 per barrel. If a 40 inch pipeline were built in anticipation of large volumes later, the per barrel cost for 500,000 b/d would be \$5.67.

A comparison of the cost of Tarim Basin oil with imports from the Middle East delivered to southern China shows that the Tarim Basin oil is competitive only when fob¹ oil prices for lighter Middle Eastern crudes hold above \$12/b - the equivalent of \$13-15 a barrel for West Texas Intermediate (WTI). Production costs at the Tarim Basin are roughly \$10/b at the field. Adding transport costs of \$2.84/b (the most optimistic of our estimates) puts the total cost of Tarim oil in the Southern Chinese market at around \$13/b.

Table 10
Cost Estimates of Alternative Routes

Route	Length (KM)	Diameter (Inches)	Capacity (Mb/d)	Total Cost (US\$bill)	Cost/b (US\$)
UZEN/ARKBINSK -					
Xianjiang	3,000	40	1,000	3.35	2.03
Korla-Guangdong	4,200	40	1,000	4.69	2.84
Korla-Guangdong	4,200	40	500	4.69	5.67
Korla-Guangdong	4,200	30	500	3.70	4.48
KAZAK BORDER -					
Guangdong	5,000	40	1,000	5.58	3.38
Azerb/Turkmen/Kharg	2,150	40	1,500	3.00	1.21
CNPC to China	3,000	40	1,000	3.50	2.12

Assumptions: Cost of capital 20% / Length of life 30 years / Operating costs 2% of capital cost.

To summarize, per barrel costs to Southern China would be the following:

- CNPC to China to Shanghai/Canton (2.12+3.38) \$4.90/b
- Kharg Island to China via tanker \$1.00/b
- Azeri/Kazak via pipeline through Iran \$2.21/b
- Tarim Basin to Guangdong (2 options) \$2.84 - \$4.48/b

¹ Free on Board. FOB prices exclude all insurance and freight charges.

Right-of-way costs could easily push the total cost of Tarim oil in the Southern Chinese market to \$15. Tanker costs from the Middle East are approximately \$1/b. Assuming a \$1/b premium for quality differences between Tarim and the sour crudes from Iran, Iraq and Saudi Arabia, Tarim oil would be competitive at prices of \$10-\$11 for Middle East sour crudes.

While world oil prices have recently recovered from their 1999 lows, history shows that they can be highly volatile. It would not make economic sense to develop the Tarim Basin fields and build the pipeline infrastructure unless there is some reasonable expectation that prices will remain above these levels long enough for investors to recover their costs.

Even if Tarim were developed, it is unlikely that production could be increased sufficiently over the next two decades to obviate the need for growing imports. An alternative to Tarim oil is to import oil from Kazakhstan via a 7,200 kilometer pipeline crossing both Kazakhstan and China. This pipeline (assuming a 40 inch 1mb/d and excluding right of way costs) would imply a per barrel transport cost of \$4.90.

Following the logic above, Kazak oil via this long pipeline would be competitive with Middle East oil at fob prices that were \$3.90/b (\$4.90 - \$1.00) less than Middle East oil. Since there are alternative markets for Kazak oil in the Mediterranean, for example, where transport costs are much less than to Southern China, it is unlikely that Kazak producers would agree to sell in Asian markets at a discount. Hence, the overland route to China would require a substantial subsidy.

The lowest cost route to transport Kazak oil to Southern China is by pipeline through Iran to Gulf ports (e.g. Kharg Island) and then by tanker to China. At an estimated cost of \$2.21/b, this route is \$2.70/b less than the overland route. Hence at a minimum, the overland route would require a subsidy of \$2.70/b to make it competitive. This would be a minimum subsidy since right of way costs and transit fees, which will be much higher for the overland route, have not been included.

An offsetting factor which would reduce the required subsidy for Kazak oil is that during the 1990s Gulf fob prices for Asian delivery have been higher than for European delivery by an average of 83 cents per barrel.¹⁰ This price differential, if it persists, reduces the cost disadvantage for sales of Kazak oil to Asia as compared to Europe.

China's policy makers may view these transport cost differentials and the required subsidies as the cost of diversifying transport routes in order to achieve a greater degree of oil security. The issue for policy makers in China is whether the security benefits of this diversification are worth the cost in terms of higher total oil import costs.

There are other benefits to the all-land routes such as the ability to use the pipeline to carry Chinese domestic western production to its eastern markets (and thus eliminating the need to construct a separate pipeline to carry domestic production) and the externalities generated by the infrastructure that must be constructed in order to build the pipeline. These could make this route more acceptable to Chinese planners.

Additional complexity is added as a result of the on-going policy of liberalization of the domestic energy industry. In particular, production of existing fields in China may be reduced when the Chinese market is open to relatively unfettered competition from imports. The costs of transporting domestic Chinese production to markets within China are especially high given that the rudimentary nature of the domestic pipeline network requires the use of railcar to transport oil in many cases. While a decreasing share of oil is being shipped in this way, these shipments still accounted for 10% of total oil use. Recent analysis has shown that at prices of \$10 fob the gulf, production at Xinjiang and Tarim will have to be curtailed unless China invests in additional pipeline infrastructure. Under \$9/b Daqing oil will still be competitive with imports when transported by small vessel to markets in the Lower Yangtze and Southern provinces. Shengli and Liache will also continue to be competitive as long as import prices remain above \$8/b. It is the oil produced in the northwest that could be uneconomic under some price scenarios even when transported by pipeline. As discussed above, at Gulf prices below \$11/b, Tarim oil would not be competitive with imports in the southern provinces. However, Tarim oil would still be used in the North and Northwest. Similarly, oil from Xinjiang would be competitive in north and northwestern provinces.

The implications of this analysis are that if oil prices fall again to relatively low levels and China frees its internal prices to move directly with international market levels, Chinese oil companies may decide it makes more sense to shut-in high cost fields in Western China in favor of higher imports of foreign crude oil in certain markets. This is especially the case as Chinese firms increasingly utilize efficiency standards required to maximize their returns on capital as well as their share prices. Thus, unless oil prices are sustained at current levels, China's Western oil production levels may not increase significantly as privatization takes place.

China's International Oil Strategy

In 1986, China's State Planning Commission, acknowledging that its domestic oil industry could not maintain oil self-sufficiency in light of the country's growing energy demand, officially gave the go-ahead to allow foreign crude imports.¹¹ However, it wasn't until 1993 that China became a net oil importer for the first time. By 1996, facing squarely the emerging trend of rising oil imports and flagging domestic oil production, China unveiled a plan to attain around a third of its energy needs through international exploration and acquisition activities.¹²

In the meantime, China focused its first steps on countries where an immediate pay-off was possible. Impetus was also created by a sudden surplus of cash within CNPC's budget in 1996 -- which it feared, probably correctly, would be diverted if CNPC didn't utilize the funds rapidly. Thus, CNPC quickly initiated investments in international oil fields in 1996-1997 in such locations as Sudan, Venezuela, Kazakhstan and Peru -- four places that had existing exploration rights tender rounds and where CNPC stood a good chance of winning acreage quickly. China also pursued oil deals in Yemen, Oman, Iraq and Iran, but no final deals have been made given international sanctions against Iraq and other more commercially driven considerations in Iran.

Table 11
Chinese Oil FDI Projects in 1997

No.	Projects (countries)	Signed year and month	Contracted investments \$ million	
			Total value	Foreign inputs
1	Sudan 1/2/4 blocks	1996	187.37	105.38
2	Sudan 6 block		3.02	
3	Sudan refinery	March 1997	56.20	28.11
4	Arkbinsk	1997	91.33	
5	Uzen	Sept. 1997	64.08	44.16
6	Venezuela	1997	82.59	
7	6/7 blocks Peru	1997	6.14	
8	Al-Dahbud		64.83	
9	Nigeria		26.09	13.04
10	Canada JV		1.80	
	Total		583.63	

Source: CNPC Statistical Report

OMAN AND YEMEN

Oil has been flowing from Yemen and Oman into China for several years. In fact, in 1998, China imported its largest quantity of oil from Oman, at 5.79 MT, followed by Yemen, at 4.04 MT. There are problems, however, with China depending too heavily on Yemen and Oman for large amounts of crude over the next decade. Both countries are extremely low on oil reserves, with 5.3 billion barrels and 4 billion barrels, respectively. While it is possible that Oman may discover additional reserves, and thus remain a supplier past 2010, Yemen will almost certainly have exhausted its reserves within the next ten years. Neither country has any prospect of increasing its exports sufficiently to sustain a major role in China's market.

IRAQ

Despite UN sanctions, China has made an effort to finalize exploration agreements with Iraq given the country's potential to be a major supplier later in this decade. CNPC has signed agreements in principle with Iraq to flag its interest but has not been all that responsive to Iraqi efforts to leverage such deals. CNPC and Chinese state-owned Norinco signed a "post-sanctions" memorandum of intention in June 1997 for development of the al-Ahdab field. Al-Ahdab is located about 40 miles south of al-Kut in central Iraq. The field contains an estimated 360 million barrels of oil. The field work would be undertaken by a newly formed company called al-Waha. Development and operating costs are expected to be around \$1.3 billion. Given United Nations sanctions, CNPC activity has reportedly been limited mainly to surveying work on al-Ahdab. In 1998, CNPC began negotiations for a second field, the Halfayah field, but no contract has been reported as signed. CNPC has investigated the possibility of service agreements with Iran but no final transactions have been reported.

Iraq's volatile political situation makes it a poor candidate as a secure source of Chinese oil imports. In addition, due to years of sanctions and isolation, Iraq's production capacity is relatively low. Massive investment would be needed to make Iraq a major supplier because of the fractious political landscape and impoverished state of Iraqi production facilities.

Table 12
CNPC Investment in Iraq

Oil fields	Acreage (km²)	Proven Reserves (mt)
Al-Ahdab	250	180
Halfayah	350	750

Source: CNPC

AFRICA

Just as China has become a significant buyer of crude from West Africa, so too have Chinese firms shown an interest in equity investment in the continent. In March 1997, CNPC signed an exploration and production agreement with the Sudanese government for blocks 1, 2 and 4. CNPC agreed to finish a 1.54 million km pipeline that was completed in May 1999 to the Port of Sudan. CNPC's stake in the venture is 40% and it has also agreed to take a 50% stake in a refinery under construction in Khartoum. CNPC indicates that it has plans to accelerate its investment in Sudan in the years to come.

The SPECC and The Great Wall Drilling Company (GWDC) have several services to support CNPC exploration and development in Sudan, and plans to expand activities elsewhere in Africa, including Nigeria and Chad, and possibly Niger and Equatorial Guinea. GWDC has contracts in Sudan and Egypt, among other countries. In 1998, CNPC submitted a bid for one of the Egyptian exploration service project. If CNPC wins a block, it will probably bring oil crew and equipment from its existing oilfield operations in Sudan and Iran and sell its oilfield equipment in Egypt. CNPC is also looking at acreage in Algeria, Tunisia and Libya.

Sudan, however, also presents a number of problems in terms of being a secure source of energy for China's future. The country has relatively small proven reserves – estimated at 800 million barrels (less than 1/300th that of Saudi Arabia). Lack of Western investment has resulted in relatively low production capacity and even in the best scenario it can take up to seven years to get new oil online. Finally, Chinese investments in Sudan are always at risk from internal instability and the possibility of international sanctions.

Table 13
Chinese Drilling Services Abroad

LOCATION	PROJECTS	START-UP	VALUE (MILLION US\$)
Sudan	Drilling operation	2-yrs from 97	23
Egypt	Lease rigs to joint venture	10-yrs from 98	
Mongolia	5 exploration wells	95-97	10.4
Uzbekstan	3 production wells and 2 exploration wells	1995	3.5
Peru	5 production wells	94-95	7.5
Thailand	11 wells and 4 directional wells	From 94	
Canada	Lease 3 rigs	From 1998	

Source: GWDC brochure 1998

China's activities in Africa and North Africa also have geopolitical overtones as well as commercial goals. First, China has been working steadily over the years to enhance its relationships with African and other states to garner more support in international forums such as the United Nations for its positions, especially on the question of the status of Taiwan. In addition, China would also like to enhance its leadership role in the developing world to build up its superpower global stature. Chinese trade and military delegation visits to Africa are often accompanied by statements regarding Taiwan by the host African states, and it is clear that China would like to enlist as many countries as possible to support its position on "one-China." China has also shown an inclination to counter-balance oil trade deficits with sales of Chinese goods, in many cases, including the sales of military equipment.

CENTRAL ASIA

It is not surprising that Chinese firms have been pushed by the government to take an interest in Central Asian oil. Asian supplies provide a "more secure" pipeline supply than long haul crude oil from the Middle East. China made its first investment in Central Asia in June 1997. CNPC agreed to purchase 60% of Kazakhstan's Aktyubinsk Oil Company for US\$4.3 billion and announced plans to build a US\$3.5 billion, 3000km pipeline linking western Kazakhstan with its own Xinjiang region.¹³ In announcing its investment, China said it hoped to secure significant, long-term supplies of crude oil which would not only make a proposed Kazakh-Xinjiang pipeline more economically feasible, but also render economically attractive planned eastbound pipelines which would link Xinjiang province with China's energy demanding, industrial heartlands.¹⁴ However, actually building the pipeline would prove to be more problematic than expected.

Oil from Central Asia presents a number of challenges. A growing Russia could export less oil given its increased domestic consumption. Extracting, processing, and transporting oil from these regions is significantly more expensive than the Middle East and especially Saudi Arabia. According to current estimates, a barrel from Russia/Central Asia costs approximately \$15. Despite recent gestures of alliance, historical antagonisms could also inhibit open trade, making energy supplies less secure than desired.

China faces the same problems that have prevented others from building significant pipelines in Central Asia. Not only are the economics of the pipelines tenuous, mainly due to the lack of proved reserves in the region, there are also matters of ethnic and social unrest in almost all of the newly formed states in this region. This instability has made it difficult to find investors willing to commit to building the infrastructure essential for transporting the energy resources to market.¹⁵ In the case of an export route to China, this threat included not only instability in Central Asian countries but also possible troubles in the Xinjiang region itself from Uighur separatists who have already claimed attacks on oil installations and convoys in the autonomous region.¹⁶ Nearly 8 million people spread across the northwest Zungaria plateau, the southern Tarim Basin, the southwest Pamir region, and the eastern Kumul-Turpanern Hami corridor, regard themselves as Uighur, against a total population of 16 million.¹⁷ China must consider the trends among this Muslim population in considering its positions toward the predominantly Muslim Central Asian states.¹⁸

Some analysts offer a benign explanation of China's Central Asia policy, asserting it is part of a non-hegemonic regional agenda, motivated by economic development priorities. "China's strategy for Central Asia and the Asia Pacific has not been formulated unilaterally but rather in consultation with countries in each of these regions. This strategy involves the formation of natural economic territories that transcend borders, extending from China's domestic economy into surrounding countries. Called the Northwest Economic Circle and the Northeast Economic Circle, they open up inner border areas to international trade, with the hope that the interior will gain the same benefits as the coastal region. Oil and gas pipelines are the sinews that integrate and link these natural economic territories."¹⁹

Others offer differing explanations of China's interests in the Caspian region. Some, like Geoff Kemp, suggest a more geopolitical interpretation, noting that China's extensive border with Kazakhstan means it must concern itself with foreign competition in the region.²⁰ Others believe China must also concern itself with separatist movements by Muslims in its own sensitive Xinjiang region that could be supported by any future Western-backed Kazakh regime.²¹ The growing interdependence of the Xinjiang region and Central Asia is demonstrated by the rise in trade, which reached \$950 million in 1998.²² China is also said to view its activities in Central Asia as a potential land bridge to the Persian Gulf whose waterborne oil supplies are now patrolled and protected by the US Navy.²³

Increased dependence on foreign oil imports will make China more dependent on the U.S. navy that patrols the sea-lanes, ensuring the free flow of oil to Asia. China is not comfortable with the

rise in US power internationally and its plans to pursue new missile defense strategies. Thus, a Central Asia strategy gives China the option to diversify away from dependence on oil that could be seen as in the “control” of the US Navy. China’s attempts to expand its oil trade with Russia can be seen in the same context. Chinese oil and gas purchases from Central Asia or Russia also help provide China with a diversification from Middle East supplies that are also viewed as unstable given historical and political trends in the region.

Some Chinese authors have also remarked that China should focus its international exploration drive on countries where Western firms cannot impede its activities. Chinese oil industry sources say CNPC’s lack of legal and financial deal making expertise compared to the international oil majors has made it difficult to acquire acreage, prompting CNPC to investigate countries where it might have competitive advantage. Countries under unilateral US oil sanctions are considered a prime target for investment for this reason as well as countries from the former Soviet Union.

“Western monopoly capital, with the support and assistance of their governments, has scrambled and seized the main oil and gas resource markets in all parts of the world. Almost all good resources markets in the world have been occupied and possessed by them,” argues Xia Yishan in the *People’s Daily*. “There is intense competition among different groups of Western monopoly capital. All of them will certainly try even harder to impede Chinese companies from obtaining these oil resources. This will cause certain obstruction to our implementation of the ‘going out’ strategy.”²⁴

China and Geopolitics

China’s rising import requirements and its pursuit of foreign sources of supply will have two clear consequences. First, it will mean that the country’s economy will become increasingly dependent on the same energy sources and sea borne lanes of transportation as other major hydrocarbon importing countries in the OECD – the US, the EU, and Japan in particular. Second, it will mean that China’s political options in confronting its growing vulnerability to supply disruption will become increasingly identical to those of the major importing countries in the OECD. Among these options is the building of a strategic petroleum reserve and developing mechanisms to coordinate the use of its strategic reserve with that of other oil importing countries in case of a disruption.

On the face of it, therefore, China’s emergence as a major oil and gas importing country could well result in Beijing’s tying its strategic interests in the Middle East and elsewhere more closely with those of the West.

In 1990/91, China abstained in the United Nations when the US mobilized an international coalition to drive Iraqi troops from their occupation of Kuwait. China was then self-sufficient in its oil supplies and had no clear economic interest in participating in the global coalition to liberate Kuwait. Yet, at the time, the prospects of China becoming one of the biggest oil importing markets in the world some time in the early years of the 2000s was already opening

interesting questions about how China would deal with growing dependence on oil and natural gas imports. Indeed, in the years immediately after the liberation of Kuwait, China appeared to be embarking on a policy that was potentially in direct conflict with US interests.

The questions that were raised in the early 1990s are still being asked, albeit with somewhat less anxiety about the potential for conflict between China and the US than was then the case. The main question was whether China's government would, to the degree it could control events, allow China to become dependent on imports from far away that required long-distance transportation by sea. Most analysts at the time believed that China would show a marked preference for either pipeline transportation from fields owned by Chinese state-owned companies or for short-haul sea transportation. It was in this context that China's oil firms started looking at options for equity crude oil in Central Asia and to some extent in Russia. Pipeline transportation of crude oil from Kazakhstan, however expensive it might be, was regarded as strategically more preferable and more logical for China than transportation via sea-lanes from the Middle East or elsewhere.

When it came to dependence on the Middle East, China again was showing a marked preference for equity oil rather than for imports from third party companies, especially state companies. Hence Beijing had a clear interest in having Chinese firms participate in oil field development projects in Iraq and to some extent Iran and Kuwait. What was worrisome at the time was the projection into the future of China, with the second largest or largest oil import market, pursuing bilateral ties with individual energy producers. Hints of what might occur were found in China's diplomatic ties to Kuwait. In the immediate aftermath of the Gulf War, China was tying imports from Kuwait to two non-energy issues: China's exports of arms and China's vote on the Security Council concerning Iraq and other matters of interest to Kuwait.

What was potentially alarming about this approach was how different it was from the other major oil importing countries of the world. The OECD governments were used to dealing with international institutions for mitigating vulnerability to oil supply disruption and which were eschewing bilateral tradeoffs between energy supply and political issues having nothing at all to do with petroleum or natural gas.

It remains the case today that China's future behavior in the oil market in the eventuality of a supply disruption at a time when China's oil imports will have grown substantially is somewhat uncertain.

On the one hand, China's growing oil import requirements could well result in its strategic interests being more closely tied to the US and other industrialized countries. In a future crisis, China might well have a different reaction from the one it had in 1990 when Iraq took Kuwait and its perceived interests might put Beijing and Washington on the same side of conflict management.

On the other hand, China cannot be expected to be enthusiastic about becoming more dependent on the US Navy to protect the sea-lanes on which its long-haul oil will be transported in the future. At a minimum, China will likely realize that reliance on the US to protect its access to oil will greatly constrain its geo-strategic options that in the past have given Beijing the freedom to support and even sponsor so-called rogue nations or governments that have been hostile to US interests.

China's military and particularly its naval buildup has been sizeable. But it remains far from sufficient to guarantee East Asian sea-lanes, much less protect security in the Persian Gulf. For the foreseeable future, China's military role will be limited. It will even remain unlikely to be able to adopt the role of a military spoiler – any effort to block oil supplies to US allies in East Asia would almost certainly prompt an immediate military response by Washington, one that would also put Beijing's own oil imports in peril.

China's leadership is recognizing that it is already reducing its strategic options when it comes to protecting its future oil supply. The main impediment in terms of policy instruments has been the privatization of China's hydrocarbon sector. Once privatized, China's oil firms will be increasingly trying to enhance shareholder value rather than China's national interests. Already the Chinese firms that have been partially spun-off by the state are looking to what analysts in Wall Street and the City of London have to say about how they are managing their asset base. Under these circumstances they are much less likely than was the case pre-privatization to invest resources in areas that are politically important to Beijing but marginal when it comes to enhancing shareholder value. China's entry into the World Trade Organization is posing further dilemmas in this regard, as WTO trade rules reduce significantly Beijing's ability to use oil trade and investments as a direct instrument of foreign policy. Indeed, the basis of the WTO rules is to strip economic policy from any foreign policy role.

Even so, Beijing is likely to urge the companies based in its territory to pursue investment and trade policies that minimize to the degree possible complete dependence on incremental supplies only from the Middle East. It is thus likely to foster enhanced ties with neighboring countries that could supply hydrocarbons directly to China. Primary among these are Kazakhstan and Russia.

Until 2001/2002, it appeared that the likelihood of Russia becoming a major supplier of hydrocarbons to China was very low. Russia had been dis-investing in its oil and gas industry since the late 1980s and the collapse of its oil sector appear permanent. The petroleum sector of the former Soviet Union had grown to be able to produce 12.5 million barrels a day in 1988. That made the Soviet Union the largest oil-producing nation in the world. At the time Saudi Arabia was producing some 7 mb/d and its capacity, then some 9 mb/d was considerably lower than the Soviet Union's. At the same time, because of the high level of oil consumption within the USSR, the kingdom's net exports were about double those of the FSU.

From 1988 to 1998, oil production in the FSU fell by 50%, and a stabilization of the decline, let alone a growth in new supplies, seemed wishful thinking. But the situation has changed

dramatically since 1998. In the Central Asian states of the former Soviet Union, new exploration has resulted in what appears to be the largest oil field discovered in the past quarter-century. The Kashagan field, with reserves anticipated to be in the range of 50-billion barrels, is likely to make feasible multiple export pipeline routes from Central Asia to bring oil to market, including a pipeline to China.

More important have been the revival of Russia's oil industry and the growing prospects of exports from Russia's new oil development projects to the markets of East Asia. While this is an area of considerable uncertainty, the direction is clear. Russian firms have been able to marshal capital on their own to revive the Russian oil industry; and, where they are unable to do so, they are willing to work with non-Russian companies to bring oil to market. In addition, there has been a political push both in Moscow and Beijing, recognizing their mutual interests as a major hydrocarbon exporter and importer and a political framework was established in the summer of 2001 to facilitate growing cooperation between Russian and Chinese firms in oil and gas investments and trade.

The change in the Russian situation is indeed marked. As far as China is concerned, Russia is now poised as it was not just two years ago to become a major hydrocarbon supplier to China. The developments in question include the new investments from foreign firms at Sakhalin and new field developments within Russia, especially by Yukos, which has been aggressively striving to become the number one oil firm in Russia.

At Sakhalin, Shell, leader of the Sakhalin-1 consortium, and ExxonMobil, leader of the Sakhalin-2 consortium have announced major multi-billion dollar investment projects since September 2001. The Shell projects include oil expansion from the current 15,000 b/d to 120,000 b/d by 2006. The Shell plans also involve the construction of the largest liquefied natural gas plant in the world, at 9.6 million tons per year. Thus far the Shell consortium's exports have been going to China, Japan, Korea and the US. With Japan's market stagnant for more than a decade, any additional Middle East supplies to the region are likely to be redirected elsewhere in East Asia, with the Chinese market the prime target. Exxon's oil plans are even more robust. Recently Exxon accelerated the schedule of its Sakhalin-2 development project, which involves three fields. Initial oil output by 2003 of 160,000 b/d is expected to rapidly grow to 250,000 b/d from the Chavyo field alone. There are two additional fields involved in the project. And the Exxon gas plan involves some 9.5-bcm/year of hydrocarbon exports via pipeline to Japan and potentially Korea and China.

In short, within the next 4-5 years, Russian supply to East Asia from Sakhalin fields under current development are likely to provide upwards of 500,000 b/d of incremental supply. And the expectation is that China will be one of the prime markets for this material.

Beyond Sakhalin, there are other prospects from East Siberia, where Yukos, the Russian firm holding perhaps the largest potential reserves in the area, is already in discussion with CNPC/Sinopec on joint projects. Yukos holds what it claims are 11 billion barrels in the

Yurubcheno-Takhomskaya zone in East Siberia in the region of Krasnoyarsk. It has a development plan to spend \$1.7-billion on 2,300-miles of pipeline to bring oil to market. Yukos and Russian pipeline company Transneft are vying for the pipeline rights and it may be that two rather than a single line will be built. An equal 400,000-b/d line is also envisaged by Yukos for licenses it holds along with Slavneft in Angarask, also in Eastern Siberia. The issue for Yukos here is whether the 400,000-b/d line should be built to China through Mongolia or directly to the Russian port of Nakhodka for export.

Natural gas exports are also on the horizon. Yukos alone has 1.5-trillion cu meters of reserves at Irkutsk. The Russian gas company, Gazprom, which is also in discussions with China about export lines, also has plans to start exploring directly for oil in its own fields. To date, the Russian oil firms have not had the opportunity to enter gas plays because of Gazprom's monopoly in that area and Gazprom has been restricted from oil plays. But all of this is now changing. That's why it is a conservative estimate that Russia will have available 1-million b/d of incremental oil for East Asian markets before the end of the current decade and China will be the primary market for this new material.

Even so, a Chinese policy that emphasizes supplies from adjoining regions will not fully protect it from the economic effects of a disruption in waterborne oil supplies. Additional supplies from Russia and Kazakhstan would serve China's interests in two ways. First, they would provide an important alternative to incremental supplies from long-haul producers in the Middle East. Second, they would provide the competitive framework for assuring that China's contracted supplies from Middle East suppliers, including Saudi Arabia, would be on the best terms possible.

Yet the diversity of supplies China is likely to achieve will not insulate it from high prices in case of a disruption of waterborne supplies. Nor will they do more than mitigate China's growing dependence on waterborne cargoes from the Middle East. Depending on how rapidly China's import appetite grows, China will be either moderately or highly dependent on Middle East supplies.

These facts place two of China's main policy objectives into direct conflict. These are the ability to act independently as behoves a superpower and the economic growth required to sustain the regime's legitimacy. Unlike Japan or the Republic of Korea, China might not be comfortable accepting a free ride on American military protection. But, at least for the time being, it has no alternatives. Future emphasis might be placed on energy-technology research, but current Chinese thinking seems most focused on boosting domestic exploration, investing in nearby oil and gas resources, enhancing its international investment program, and the profitability of Chinese domestic oil firms. In the longer run, however, China will not be able to avoid being drawn into closer dependence on the world's leader in proven petroleum reserves, production, spare capacity, and net exports – Saudi Arabia.

Part II: Sino-Saudi Relations

Introduction

Because of Saudi dominance of the world energy markets, China is increasingly focusing its attention on the Kingdom. And Saudi Arabia sees China as an enormous potential market. “The Kingdom needs to develop a very strong presence in the Chinese market because of the infinite potential of what China will become one day,” said a former senior vice president at Saudi Aramco. “We cannot afford not to be a major player there.”²⁵

Regardless of the actual amount of direct crude imports from Saudi Arabia, China will become increasingly reliant on the Kingdom due to its preeminent position in OPEC and ability to influence world oil supplies and prices. “The fact that only 19% of US oil imports originates from the Middle East (as was the case in 1973) is immaterial because oil is fungible and supply disruption would result in higher prices for all global consumers.”²⁶ Thus, not only for its supplies, but also for its key role in the global oil network, Chinese thinking has become increasingly fixed on Saudi Arabia. As a sign of this new fixation, the Chinese Communist Party recently appointed a “nomenklatura” position for liaison with Saudi Arabia. Nomenklatura is a title granted to several thousand individuals who head central and local governments, social organizations, and large corporations owned by the central government. A nomenklatura position is highly coveted as a base of capital and negotiating power and indicates the importance with which dealings with Saudi Arabia are perceived.

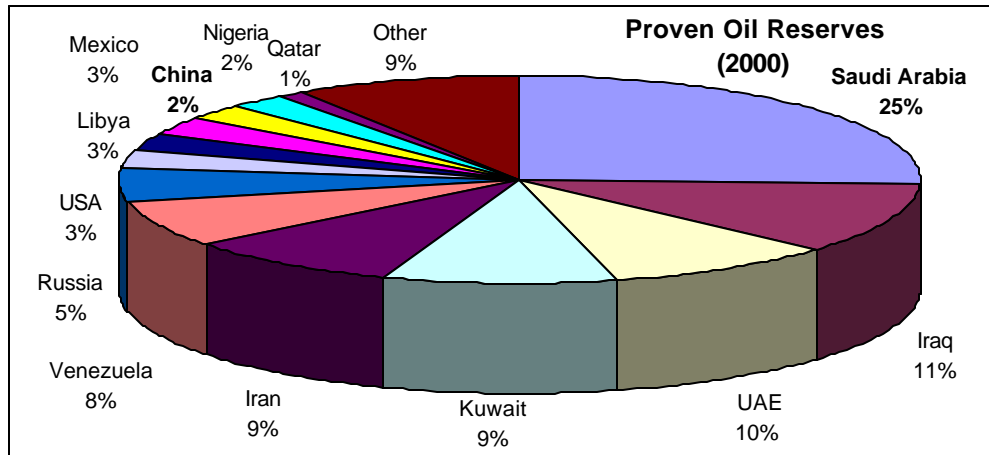
In addition to the energy trade, Saudi Arabia and China share common geopolitical and cultural interests, which should deepen along with economic ties. These include a desire to liberalize their economies without losing governmental control, support for a counterbalance to US dominance in global affairs, resistance to perceived US and UN “meddling” in internal affairs and human rights criticisms, and finally, interest in maintaining stability in the Middle East and unfettered access to global oil supplies.

Saudi Oil Statistics

Numerous factors explain the growing links between Saudi Arabia and China, but economic concerns are paramount. China needs Saudi Arabia as part of its energy strategy, and Saudi Arabia recognizes the promise of the burgeoning Chinese oil market as a way to increase its exports and to forestall economic stagnation. As charts 2-4 show, Saudi Arabia will be a key supplier of oil to China because the Saudis lead the world in proven reserves (261 billion barrels), production capacity (up to 10.1 mb/d)², and net export (7.84 mb/d). So important is Saudi Arabia to world oil, “if Saudi oil production were interrupted for any length of time, the combination of spare capacity in all other OPEC countries combined, plus the IEA’s emergency stocks at full capacity, would still be inadequate to make up for Saudi production loss.”²⁷

² Saudi production capacity is expected to increase by .4 to .5% next year, according to a senior foreign ministry official with close contacts with Saudi Aramco.

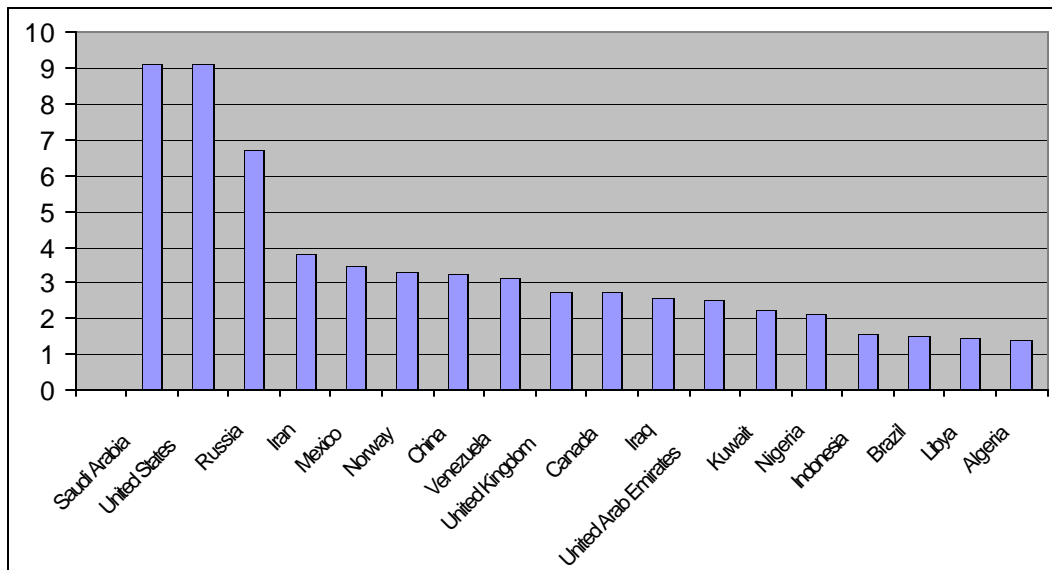
Chart 2
World Proven Reserves



At the end of 2000, Saudi Arabia had 261.7 billion barrels (bbls) of proven reserves, which formed 25.01% of the world's total reserves. The closest competitors for the Saudis in the Middle East for reserves are Iraq (112.5 bbls), UAE (97.8 bbls), Kuwait (96.5 bbls), and Iran (89.7 bbls). Outside of the Middle East, Venezuela (89.7 bbls), Russia (76.9 bbls), and the United States (48.6 bbls) possess the largest proven reserves.

As Chart 3 shows, Saudi Arabia also has the highest level of oil production.

Chart 3
2001 Production Estimates (mb/d)

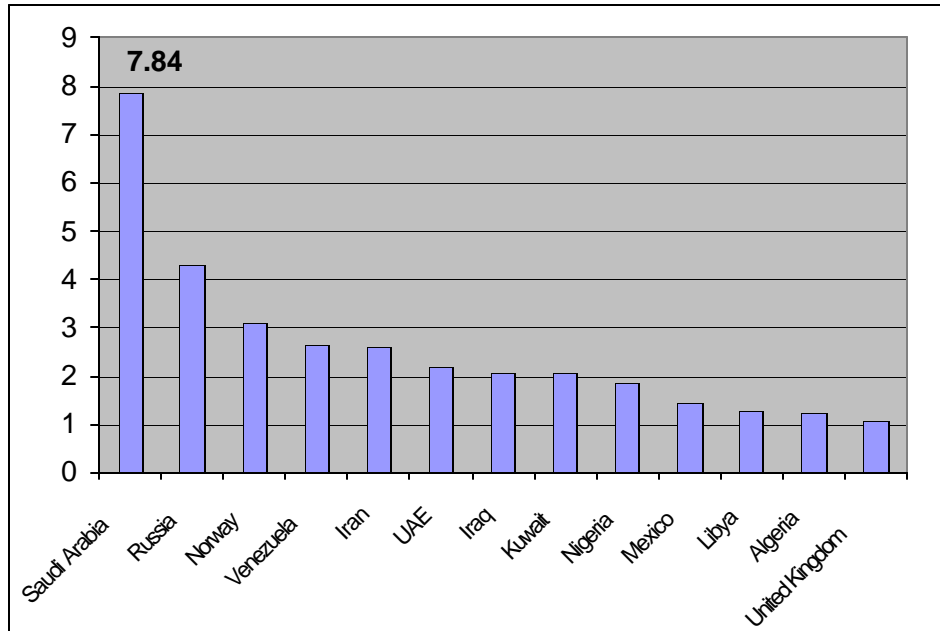


Source: Energy Information Administration – May 2001

In 2001, the Saudis produced an average 9.12 million barrels/day, followed closely by the United States at 9.08 mb/d, and the former Soviet Union at 6.71 mb/d.

While all of these statistics compose part of the story of Saudi energy dominance, its leadership as a net exporter is most important for our considerations. At 7.84 mb/d, Saudi Arabia far outstrips its closest competitors – Russia (4.31 mb/d) and Norway (3.11 mb/d).

Chart 4
Top World Oil Net Exporters, 2000



Sino/Saudi Oil Connections

China recognizes the implications of Saudi dominance of the world energy markets, and has responded by increasing its economic, diplomatic, and cultural ties with the Kingdom. An early indication of this rapprochement was an oil cooperation agreement signed in September 1999 when Chinese President Jiang Zemin visited Saudi Arabia. The agreement stipulated that Saudi Arabia would open its domestic market to Chinese investment except in oil exploration and development. Similarly, China has promised to open its downstream refining business to Saudi Arabia. China, strapped for cash, is interested in Saudi financing for upgrading projects that would allow Chinese refineries to handle a larger proportion of heavy Middle East crude supply.

China is also interested in enhancing its exploration and production service business activities in Saudi Arabia and elsewhere in the Persian Gulf. China Petroleum Engineering and Construction Corporation (CPECC), CNPC's overseas construction arm, has been active in the Persian Gulf since the early 1980s.

Finally, the fact that Saudi Arabia has staked its claim on the Chinese market is a good indicator that they will in fact come to dominate there. With the lowest extraction costs and highest reserves, the Kingdom is in a unique position to undercut almost any other producer. Saudi oil is not sold on the open market, but through a highly secretive contracting process. In July 2001, Saudi Arabia overtook the UAE as Japan's primary supplier of oil. (Saudi Arabia's exports to Japan grew by 20.7% in July to 27.40 million barrels, while the UAE's exports to Japan dropped by 19.7% to 26.25 million barrels.²⁸ Internal Saudi sources account for this sudden "July shift" to a secret Saudi-Japan oil deal wherein Saudi Arabia offered Japan oil at a rate that undercut the UAE's price (Saudi supplies continued to outpace those of the UAE through November, 2001.)²⁹ Such pricing flexibility ensures that the Saudis will win any market war they enter. This is also due to the fact that, for every market, the Saudis have no more than one major competitor, and unlike any of their competitors, they are able to compete in every market. Finally, as a senior Aramco executive said, "We need the Chinese market and we're going to get it just like we got Japan and the US - through aggressive marketing subsidies."³⁰

Saudi Solutions to Chinese Refining Limitations

While it is true that Chinese refineries are currently equipped to handle low sulfur crude (explaining in part the high concentration of imports from Yemen and Oman), efforts are underway to upgrade this refining capacity to process the inevitable Saudi oil. For example, the Zhenhai refinery (the largest of SINOPEC) recently announced that by 2004 it would have completed an expansion and capacity upgrade to allow it to process 14 million tons of high-sulfur crudes per year.³¹ Similar upgrades are underway throughout China, as the Chinese realize that at least two of their primary suppliers of sweet, light crude (Yemen and Oman) could have tapped all of their reserves by 2010.

Joint ventures are also afoot to upgrade China's refineries. In late 2001, Saudi Aramco, ExxonMobil, and Fujian Petrochemical took another step toward the ultimate completion of a 240,000 b/d upgrade of a major Fujian refinery by signing an agreement for a Joint Feasibility Study (JFS). Mr. Abdulaziz F. Al-Khayyal, senior vice president of Saudi Aramco, said, "The signing of the JFS submission agreement marks a key milestone in the development of the Project and Saudi Aramco's strategic partnership in China."³²

In addition, Saudi Aramco is now the largest shareholder in the Thalin refinery and is negotiating with SINOPEC to expand the refinery at Maoming. Also, China has made a deal for 10 million tons of Saudi oil annually for a 50-year period, with SINOCHEM processing part of the oil at the new joint-venture Qingdao refinery and the rest at its Dalian facility, signaling a close and growing import/export relationship between the two countries.³³

Meanwhile, it is likely that the Kingdom will divert some of its lower-sulfur crude exports away from Europe and the US toward China. As a senior economic advisor to the Saudi Royal Court told us, "Aramco would have no problem diverting the necessary amount of sweet crudes to China. We are in complete understanding about the realities of the Chinese refining situation and

are ready to aggressively penetrate this market when the time comes to do so.”³⁴ In fact, a similar move was made several years ago when new South Korean and Indian refineries came online. Saudi sales to Europe (and less so to the US) were decreased to make room for sales to India and South Korea. Some at Saudi Aramco hint at taking away crude from the French or Italians in order to meet China’s import needs. Finally, Saudi Aramco itself could upgrade its refineries in Greece in order to provide China with the higher quality oil it requires while these other activities are underway.

Military Trade

While China’s military exports over the last 15 years have decreased in an attempt to meet international arms control specifications, it is still a major supplier, with agreements to sell nearly \$2 billion worth of arms in 1999 alone. In addition, there is speculation among the US intelligence community that covert deliveries have continued.

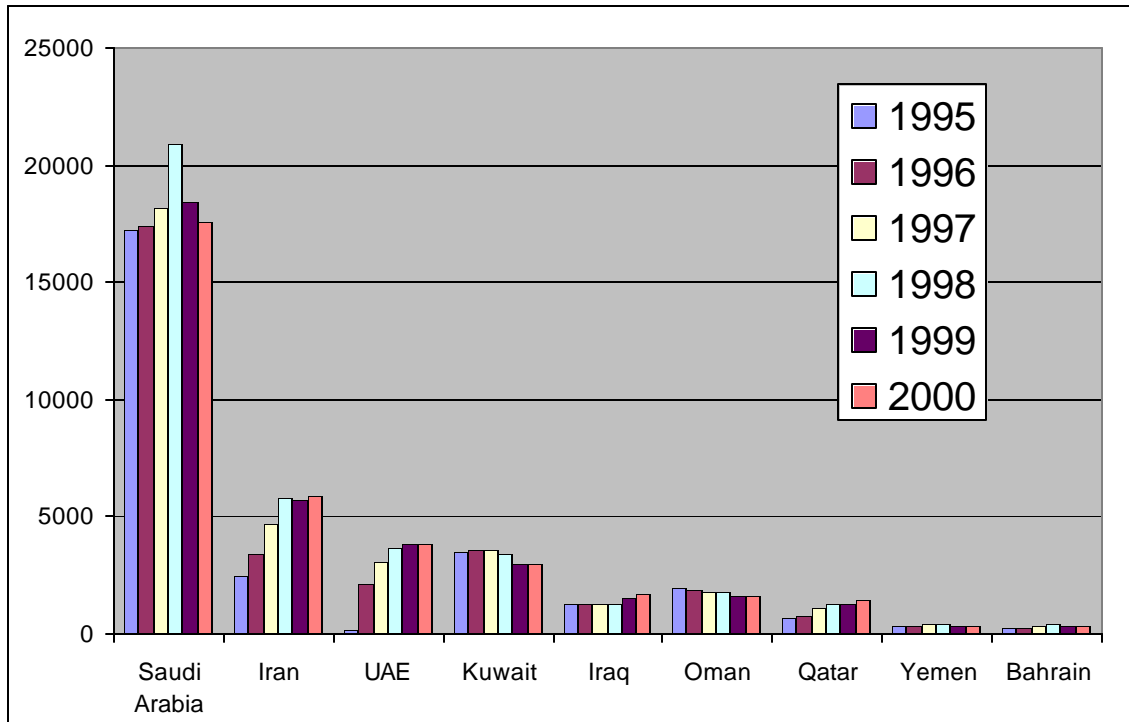
Several signs point to possible increased military trade between China and Saudi Arabia. Ballistic missile technology is one of the fastest growing military markets in the developing world, and Russia, China, and North Korea are the three main sources of intelligence and transfer in this area.³⁵ China transferred 36 CSS-2s to Saudi Arabia armed with conventional, high explosive warheads weighing 2,500 kg each.³⁶ Further, as China’s biggest customer in the region (Iran) is one of Saudi Arabia’s historic adversaries, Saudi Arabia has reason to reach out to China to not only curtail those sales but to lure China away from Iran with higher bids and diplomatic pressure. As a former assistant director in the Saudi General Intelligence Directorate told us, “Clearly, we [Saudis] are going to have to give the Chinese numerous incentives for them to stop supplying the Iranians with those long-range missiles. One way is clearly going to have to be a redirection of Saudi purchases to also include Chinese military equipment. The usual suppliers [US, England, and France] won’t lose importance, of course.”³⁷

This trade is not new. In 1991, China assisted Saudi Arabia in developing a chemical warhead for its CSS-2 missiles. There were also reports in 1992 that China was helping Saudi Arabia develop a nuclear capacity. In 1996, China was listed as the most significant supplier of Weapons of Mass Destruction (WMD)-related materials to foreign countries.³⁸

While Saudi Arabia is one of the world’s leading weapons purchasers, and certainly the largest in the Middle East (see Chart 5 below), there are problems within the Saudi military establishment and strategy outlook that indicate possible increased interaction with China. Diversification has emerged as a key component in Saudi Arabia’s arms procurement strategy. This is due to the fact that there is a sense of over-dependence on the United States, concern over the US/Israeli alliance, the awareness of military purchases as a possible diplomatic tool to maintain support from supplier nations, and an opportunity to “recycle” oil exports to maintain market share.³⁹ Further, air defense plans in Saudi Arabia are leaning increasingly on ballistic missile technology, and there are no current plans in the US to supply these to the Kingdom. Nevertheless, as Iraq and Iran make progress in their own ballistic missile capabilities —these

defense systems will be needed and China is a primary global supplier of such systems. Finally, acquiring some of its materiel from China could allay criticism from fundamentalist groups within the Kingdom and throughout the Muslim world.

Chart 5
Comparative Military Expenditures in the Gulf – 1995 – 2000
 (Current US \$millions)



Data Table (\$000)

Year	Iran	Iraq	Saudi Arabia	Bahrain	Kuwait	Oman	Qatar	UAE	Yemen
1995	2500	1300	17000	273	3500	2000	700	200	345
1996	3400	1300	17500	285	3600	1900	755	2100	362
1997	4700	1300	16300	364	3600	1800	1100	3100	411
1998	5800	1300	18000	402	3400	1800	1300	3700	396
1999	5700	1500	18500	306	3000	1600	1300	3800	374
2000	5850	1700	19000	321	2950	1650	1450	3800	382

Source: "Saudi Military Forces Enter the 21st Century," Cordesman, August, 2001 (www.csis.org) and personal estimates.

Saudi Arabia looking to China could also come about as a result of diminished US support. With Iran and Iraq acquiring long-range missiles and other delivery systems capable of transmitting biological, chemical, and nuclear weapons, Saudi Arabia will need to counter this

threat with counter-proliferation capabilities, missile and civil defenses, and new security relationships. The US, its resources stretched, may find it impossible to supply Saudi Arabia with all it needs. Further, Saudi Arabia is open to infiltration by special forces, terrorist groups, or unconventional attacks. If large US casualties result from such infiltrations, US support may be hard to come by or politically difficult to maintain.

In short, though China is not a major player in the lucrative international conventional weapons market, it is likely to make increasingly aggressive entry attempts as its economy grows more powerful. China, like all other major weapons suppliers, may then look to this market, as well as to the WMD/ballistic missile market, as an important source of income. Given Saudi Arabia's appetite for arms and China's ability to provide them (sometimes in exchange for oil or at cut-rate prices), an increased military relationship between the two countries is likely. As a former Assistant Director General in the Saudi General Intelligence Directorate recently told us, "at the end of the day we know that the Chinese would not have a problem selling us any kind of weaponry as long as we can pay for it."⁴⁰

Saudi Domestic Reasons for Rapprochement

Saudi Arabia relies almost exclusively on oil exports for its budgetary needs. Since 1992, the petroleum sector has contributed an average of nearly 40% of GDP, 75% of government revenues and more than 90% of export receipts.⁴¹ Yet mismanagement of its oil wealth and declining oil prices over the past 25 years has led to endemic budget deficits. A rapidly growing population³ and lack of investment capital for necessary infrastructure projects (in the desalination, electrical, transportation, and telecommunications industries) forces the Saudis to aggressively seek new markets for their petroleum. As a former Deputy Minister of the Interior has said, "the demographic explosion that Saudi Arabia is and will be witnessing in the next decade gives the government little room but to explore aggressively all ways of maximizing oil revenues."⁴²

Economic liberalization, sound investment policy, and accession to WTO may help the Kingdom to meet its capital needs, but with necessary upgrades estimated to cost upwards of \$120 billion between now and 2020, the Kingdom must aggressively pursue all options.⁴³ Thus, there is strong domestic economic pressure for the Saudis to dominate the Chinese oil market.

Political Reasons for Rapprochement

Though the economic reasons listed above are the primary cause for the Sino/Saudi rapprochement, the two countries are growing closer together for political, cultural, and historical reasons as well. Both Saudi Arabia and China seek economic liberalization,

³ Saudi Arabia has a population problem that compounds its need for economic growth. 25% of its population is expatriate, the source of potential unrest, healthcare, and housing problems. Over 50% of the nation is under 20 years old, leading to an employment crisis. Finally, its 3.28% annual population growth rate is relatively high, indicating that these pressures won't abate soon.

privatization and diversification while at the same time maintaining strict governmental controls. As the former Saudi ambassador to China, the late General Ali Almdar, said as early as 1995: “What is clear is that there is a very similar culture of governance between us and the Chinese. Although we are ideologically clearly on different sides of the political spectrum, the way we manage and govern our respective societies are extremely similar in a lot of ways.”⁴⁴ Both Saudi Arabia and China are resistant to US dominance in world affairs. Both countries are also mutually resistant to criticism over human rights issues.

In the past few years, the Chinese have come to see themselves as a counter-force to the US/Israeli alliance by supporting the Palestinian agenda. In the United Nations Security Council, China has been the supporter of a number of pro-Palestinian measures. China has often called for aid to the Palestinians. Finally, Arafat has met with the Chinese numerous times and counts them among his supporters in the international community. This Chinese support for the Palestinians is accelerating the Sino/Saudi rapprochement as Saudi Arabia grows increasingly frustrated with the perceived US tilt toward Israel.

Evidence of Rapprochement – Increased Trade and Diplomacy

Trade and diplomacy between China and Saudi Arabia has increased drastically for all the reasons cited above. By the end of 1999, bilateral trade between Saudi Arabia and China totaled \$1.7 billion, and was expected to grow by over 60% in 2001.⁴⁵ This trade consists primarily of oil, petrochemical, and agricultural products. In 2000, Saudi imports to China grew by 84% while Chinese imports to Saudi Arabia grew by 42%. Saudi-Sino trade, which makes up 37% of the total trade between China and the Gulf countries, amounted to \$1.86 billion in 1999, with imports from Saudi Arabia amounting to \$911 million and exports exceeding \$944 million. China imported 2.5 million tons of crude oil from the Kingdom in 1999 in addition to 200,000 tons of refined oil. The official volume of bilateral trade has increased at an annual rate of 27.9% in the last 10 years. The total volume of bilateral trade from 1991 to 1998 reached more than \$8.9 billion. At the same time, there has been an increase in the number and importance of bilateral meetings between the two states. (Appendix II provides a calendar of these major developments over the past three years.)

A Note on Chinese Muslims

China has a long history of social, religious, and economic interaction with the Islamic world.⁴ Today, it is home to an estimated 35 million Muslims, 35,000 mosques, 43,000 imams, 433 Islamic organizations, nine Islamic institutes, and an Islamic museum to which King Fahd has made significant financial contributions. However, a growing Muslim insurgency in China’s oil and mineral-rich Xinjiang Province could strain relations with Saudi Arabia.

⁴ During the Chinese Sung Dynasty (960-1279) Muslims basically ran the import/export businesses that traded with China. During the Ming Dynasty (1368 – 1644), Muslims were fully integrated into the Han society and served as intermediaries between China and the Middle East.

The Saudis take a special interest in the welfare of Chinese Muslims, and have lent a receptive ear to their grievances against Beijing. As General Ali Almdar, Former Saudi Ambassador to China, noted in 1995, “the situation of the Chinese Muslims has always been of great concern to the Saudi government, and especially to the religious authorities.”⁴⁶ There is great internal pressure from Saudi clerics on the Saudi royal family to support financially and diplomatically the Chinese Muslim populations. The late Sheikh Abdulaziz Bin Baz, Former Grand Mufti of Saudi Arabia, summed up the feelings of many Saudis when he proclaimed: “We have a moral obligation to help our Chinese Muslim brothers.”⁴⁷ While some of this help would be purely humanitarian, many Saudi clerics are motivated by a desire to spread their pure *salafit* interpretation of Islam.

But as the Muslim separatist movement becomes more violent, external support for Chinese Muslims is extremely suspect and mediated through official channels. Reports of bombings and assassinations by insurgents followed by summary trials and executions of the perpetrators have increased in the past few years, forcing the Chinese to use heavily armed security forces to establish order in Xinjiang.

Thus, the Chinese Ministry of Religious Affairs has kept firm control on the practice of Islam and the actions of its Muslim communities. For instance, Chinese Muslims cannot study the Koran until they reach 18 or graduate from high school, all Imams are appointed and reviewed by the Chinese Communist Party Central Committee, as are all Islamic books, sermons, and Koranic interpretations. While the Chinese have allowed certain symbolic gestures (such as the Saudi financing of a mosque reconstruction in central Beijing), many other projects have been blocked. One former Deputy Minister of Islamic Affairs for International Islamic Affairs explained that his Ministry “tried our best to finance humanitarian projects in the northwest Muslim provinces of China. But we were limited due to the strong control that Beijing has over these regions.”⁴⁸

These and other measures have been taken, according to Mr. Zhou Guohai, Chinese Minister of Religious Affairs, because the Chinese “deeply fear Islamic extremism,” and “deeply distrust the Koran and what it teaches.” He also proclaimed that “after the incidents in the US [on September 11th], we will make sure that Islam is practiced in a way that is in line with Chinese culture and tradition.”⁴⁹

A former senior official in the Chinese Ministry of State Security was even more explicit:

Islam is arguably the most dire threat to Chinese national security and national internal cohesion today. The 20 to 25 million Chinese Uihgur Muslims, if not properly and closely monitored, could one day lead a potent secessionist movement, and this would open up a Pandora's Box scenario for our central government in Beijing. Thus, what comes out of Saudi Arabia will be one of our main dilemmas in the future. The Communist Party has realized that the Saudis will become one of our most important strategic partners, because no one will really ever be able to compete with them in oil matters, but at the same time, we also have a deep fear of their ever growing and immense influence on the Islamic world.⁵⁰

The Saudis are performing a delicate balancing act on this issue, one made more complicated by the presence of radical elements within the Kingdom itself. However, so far the royal family has shown pragmatism in regards to the Chinese Muslim population. As the late Mamoun Kurdi, former Saudi Deputy Foreign Minister for Economic and Cultural Affairs, has noted, “we have been very careful on how we deal with the Uihgurs. For while we have a responsibility as the leading and most influential Muslim nation, we also do not want to upset the Chinese.”⁵¹

Conclusion

Despite the problems that the separatists in Xinjiang present, the Sino-Saudi rapprochement can be expected to hasten and deepen. The importance of oil to China’s economy, military trade, and a number of common policy goals and cultural outlooks will fuel this development. Since China is a Saudi ally bereft of the problematic aspects of a Saudi-US alliance, Saudi Arabia could possibly begin looking to the Chinese for those economic, security, and political needs it now garners from the US. As ties strengthen, there will be an expansion of the social, political, security and economic ties discussed above.

China will be likely to aggressively market its weapons systems to the Saudis in order to offset the costs of petroleum imports. It will also seek policy symmetries with the Saudis that assure a free-flow of oil, weapons, and agricultural goods. Finally, the Chinese will encourage the Saudis to invest in China, especially in their downstream energy sector.

Saudi Arabia will aggressively market its oil to China while at the same time investing in its Chinese refinery upgrades (necessary for the Chinese refining of Saudi sour crude). Weapons deals will be sought, along with agricultural trade. Regardless of the actual amount of Saudi oil China imports, Saudi Arabia’s key position in OPEC ensures it will play a decisive role in China’s energy equation. And as the United States has learned, strong ties with the Saudis are essential to keeping world oil prices within a “reasonable” range. No doubt China will share these concerns as it joins the global economy and becomes more dependent on world oil prices. In short, sway with the Saudis must be part of every country’s energy security policy.

Further, as Saudi Arabia makes its own attempts to increase stability in the region it will be likely to use the “oil carrot” and weapons purchases to lure China away from Iraq and Iran. Finally, as Saudi Arabia faces its own issues of economic diversification, political unrest, and demographic challenges, it may look to China for co-investment, political partnership, and influence among its expatriate populations.

Finally, it is important to note that this relationship could be pursued without regard for Saudi Arabia’s “special relationship” with the United States. As the late Mamoun Kurdi, the former Deputy Foreign Minister for Economic and Cultural Affairs, said in 1998: “From the Saudi perspective there are two distinct issues: the vital relationship that Saudi Arabia and the US enjoy is separate from our pursuing a strategic economic relationship with the Chinese.”⁵²

In conclusion, China is aggressively seeking a place in the Middle East. Saudi Arabia will not sit back and let this happen to its disadvantage. As the Chinese grow closer to Iran and Iraq, they will experience increasingly attractive overtures from the Saudis who will use their abundance of oil for export to draw the Chinese closer. Further, as the Saudis experience friction from within their own borders and in the rest of the Muslim world over their alliance with the United States, alternatives are likely to be sought, and China stands ready to fill that gap. In short, Saudi Arabia and China are experiencing a rapprochement, and any state seeking to influence the policy of either will be increasingly forced to consult with both.

Part III: Implications for United States

The growth of Chinese oil imports poses challenges to US foreign economic and security policy whether or not Chinese imports are focused increasingly on Middle East, and especially Saudi Arabian oil resources. But the likelihood that a significant amount of Chinese supplies will come from the Middle East poses additional challenges for US policy. Much of the challenge will depend in practice on Saudi policy itself, in ways that are spelled out below.

The Growth of Chinese Oil Imports and the Challenge to the US

As is summarized in Table 3, China's oil imports are expected to grow by between 2.04- and 3.64 mb/d between 2000 and 2010, by 2.71 to 5.4 mb/d between 2000 and 2015, and between 3.45 and 7.54 mb/d between 2000 and 2020. This assumes that China is able to maintain its current oil product and all of its incremental demand comes from imports.

Putting this in perspective, the higher end of the increase between 2000 and 2010, based on a 7.2% compounded annual GDP growth rate, is higher than that total imports of all but two countries in the world – the United States and Japan. At this level, China's oil import levels would be about the same as Japan's by 2010, second only to the US. China would be the only major oil importing country not a member of the International Energy Agency and the only major oil importing country left to its own devices to deal with an international oil supply disruption. At the higher end of the projections, by 2015, China would actually replace Japan as the world's number two importer and by 2020 would begin to approach the size of the US as an importing country.

China's market will almost certainly be the largest incremental oil market in the world for the next twenty years. As such it will be the target of marketing campaigns by all of the world's suppliers capable of increasing output at a rapid rate. Saudi Arabia, Iraq, Russia, Kazakhstan, Kuwait, and the UAE are more than likely to be the principal suppliers that will be targeting this market. In this regard Saudi Arabia and Kuwait are unique in that both have monopoly national oil companies, whose export policies are direct instruments of the state that owns them. The other countries have no central national oil company that acts on behalf of the state to implement government foreign policy.

As between Saudi Arabia and Kuwait, the latter emirate has neither the ability nor the willingness to rapidly expand exports on a scale that could meet China's likely level of import requirements. Saudi Arabia alone fits this role.

In this context the United States has the same objective interests vis-à-vis China as it does toward other major oil importing countries, including Japan and the industrialized countries of Western Europe. These can be stated succinctly.

- The United States should want China to avoid to the extent possible the development of highly politicized bilateral energy ties with any oil-exporting country.
- It would not want China to be able to attain special access to supplies at the expense of other importing countries.
- It would not want any producer to be able to exert special influence over China's foreign policy by threatening to withhold oil supplies at a time of disruption.

The politicization of oil takes place only in tight markets, or markets that are vulnerable to supply disruption. The key to avoiding the circumstances that would clearly be against US interests in the oil arena resides in finding ways to co-opt Chinese policy in the eventuality of an oil disruption. As a supplement to planning for disruption, China should be encouraged in every way to avoid the sorts of bilateral energy relationships that could be deleterious to US interests. In concrete terms:

- The United States should encourage China to create a strategic petroleum reserve to cover 90 days of oil imports – the same level required in the International Energy Agency. Only if China develops a strategic reserve, in tandem with its growth of imports, will it be able to have a policy instrument that both protects its economy in case of a disruption and that also serves as a signal to any oil producing country that it will not pay to try to “blackmail” China through the use of the producer's oil weapon.
- The United States should encourage China to work with the International Energy Agency so as to coordinate actions with the IEA in case of an international oil supply disruption.
- The United States should examine ways to bring China into full membership in the IEA. The IEA was formed in the middle of the 1970s, at a time when the bulk of the world's oil imports were into the OECD countries. Since then, oil imports in the emerging markets have grown at a faster rate than imports into the OECD. Indeed, with the exception of the United States, other IEA members are reducing their oil demand levels and oil import requirements. The IEA will increasingly be unable to play the role for which it was formed, as emerging markets increasingly become the major oil importing countries.

Beyond the co-optation of China into the IEA emergency response system, the United States should also find ways to encourage China to develop its trade relations with oil exporting countries on a non-discriminatory, non-special case basis. The best vehicle for accomplishing this is through the WTO and through the development of universal trade rules in the WTO which impede members from trying to gain preferential trade access to oil supplies through special bilateral trade arrangements.

In the end, it will only be through fostering the integration of China into the world's trading system and the oil emergency supply framework of the OECD that the United States will be able to tame China's clear instinct for bilateral energy relations. What the US needs to do is find

ways to have China put energy policy on a separate track from foreign policy so as to prevent the politicization of energy relations.

Saudi Arabia's Policies

The Kingdom of Saudi Arabia also holds some of the keys to how the Saudi-Chinese relationship will play out and how the US-China energy relationship might work. That's because Saudi Arabia, by virtue of its own policies, has been the primary oil supplier to the United States. If markets were left to their own devices, this would not be the case.

Given the long-haul nature of Saudi supplies to the United States market, the way Saudi Arabia makes certain that it retains the role of number one supplier to the US is through its pricing policy. Saudi Arabia sells oil on a geographical basis. When it sells to customers in the US, its contracts assure that the oil will neither be re-sold without the permission of Saudi Aramco nor sold on a spot market basis. All of its US customers, in short, must import the oil into the US. The way that Saudi Aramco makes that possible is through its pricing, enabling its customers to buy Saudi oil on a delivered basis as prices competitive with other oil. Most of the other oil going to the United States comes from the Atlantic Basin – from Canada, Mexico and Venezuela, from the North Sea producers and from West Africa, all areas closer to the US market than Saudi Arabia.

Should Saudi Arabia, for whatever reason, change its policy of being the number one supplier to the United States, US interests in the Middle East oil-producing world could change. Without special Saudi pricing, US companies would probably reduce their oil imports from the Middle East from their current level of about 25% to a level closer to 10-15%. Indeed, if US oil demand stagnates and if new supplies from West Africa grow at the top end of their projected level for the next decade, US dependence on Middle East oil could well fall to 5%, if Saudi Arabia decides to no longer protect its role as number one supplier to the US.

Under these circumstances, the US public could turn away from support of the US role as protector of Middle East supply lanes. From an oil supply perspective, this would be unwise. Even if the US imported no oil from the Middle East, its economy would remain vulnerable to an oil supply disruption. Even if the US imported no oil from the Middle East, it would have an interest in making sure that other countries of concern to the US were not subject to political pressures from any Middle East producer.

Nonetheless, if US imports from the Middle East dropped precipitously and the US public turned away from support of the US role as protector of Middle East producers as well as of long-haul supply lanes, the US government might tell other oil importing countries in Europe and East Asia that the US will expect others to move in and protect their own oil supplies directly. Thus, under these circumstances, countries that are increasingly dependent on Middle East supplies would undoubtedly try to put in place special bilateral policies to help assure their supplies not only under emergency conditions, but under “normal” times as well.

The main US interests in the energy markets are to make sure that there are mechanisms in place for burden-sharing and that there is a minimal amount of “free-riding” on US policies by other oil importing countries.

If the US is able to co-opt Beijing into perceiving its self-interest in a petroleum sector that is free from politicization, there should be no US fear of the consequences of a Sino-Saudi Rapprochement, under the terms specified in this report. It should be in the US interest to have Saudi Arabia develop stable trade relations with emerging markets that would enable the kingdom to expand its production as well as its production capacity, and therefore its income over the coming twenty years. And it should also be in the US interest to have China secure increased resources from the kingdom, so long as Beijing also took measures to encourage supplies from elsewhere and took steps to reduce its vulnerability to an international supply disruption through the building of a robust strategic petroleum reserve, coordinated with the International Energy Agency.

Part IV: Conclusion

There is no doubt that China will become one of the world's largest energy importers, if not over the next decade, then certainly over the next two. In the process, the Chinese market will become one of the fastest growing in the world, both for incremental supplies of crude oil and for natural gas.

There are two aspects of this issue that are of importance to this report.

1. First, as the world's premier growth market, China will provide an opportunity for the world's leading exporters to vie for market share. For all practical purposes, the leading contenders as suppliers to the market are, on the one hand, the Middle East producers with growing capacity, and, on the other hand, Russia and the hydrocarbon-rich countries of Central Asia. Among these Saudi Arabia looms large, depending on how rapidly the Chinese market grows. If China's imports grow at a sustained rate of 7% per annum or higher, the kingdom of Saudi Arabia would be perhaps the only oil producer capable of meeting the bulk of China's import requirements.
2. Second, China will, in theory at least, be able to make geopolitical choices concerning its preferred supplier. The theoretical aspect of this stems from bilateral arrangements that Beijing might be able to strike with producing country governments. In practice, however, governmental frameworks will be less compelling than they might have been in the past. Of China's major potential suppliers, Saudi Arabia, Kuwait and Iraq stand somewhat alone, with their government companies in control over virtually all crude oil and petroleum product exports and capable as well of making major downstream investments in China's market. The other likely sources of crude oil and petroleum products – Russia and the countries of Central Asia – no longer have state-company monopolies managing their hydrocarbon sectors. Decisions on supply contracts are made on commercial grounds almost exclusively. What's more, as the performance of China's petroleum firms become increasingly tied to bottom line factors, the ability of the Chinese government to influence commercial decisions taken by Chinese firms will diminish significantly.

While the degree to which Saudi Arabia and China will develop mutually beneficial energy ties remains an open question, there is little doubt that the energy ties between the two governments and economies will grow significantly in the two decades ahead. These ties will almost certainly include direct investment by Saudi Aramco in the Chinese market in refining crude oil and in the distribution of petroleum product. Certainly from a Saudi perspective such investments will be a fundamental element of policy. This is the case for two reasons:

1. Saudi Arabia will want to maintain if not increase its share both of global oil exports and of Opec exports. It alone among oil producing countries has the capability of

expanding its production potential to meet the total incremental oil requirements of China. By having its own captive downstream market within China, Saudi Aramco will be able to commit large volumes of crude oil more easily than it could if it were simply selling crude oil to Chinese firms on a term contract basis. It is simply easier to sell to one's own downstream network than it is to renew contracts in the competitive market place each year.

2. Additionally, by securing a downstream stake in the China market, Saudi Aramco will be better able to balance the cyclical nature of crude oil prices with the counter-cyclical aspects of petroleum product prices. As a result, Aramco will not only secure its market share, but it will also create a natural hedge against crude oil price volatility.

From a Chinese perspective, the main question remains whether Beijing will see in long-haul Saudi supplies the sort of security it wants to achieve. There would be two challenges to security of supply – disruption of the sea-lanes and disruption due to internal change in Saudi Arabia.

What would be the potential consequences if these two issues are set aside? Let us assume that Beijing finds ways to overcome the two insecurities identified above and forges strong security of supply links with Saudi Arabia. What might be US concerns?

Let us review these issues under various circumstances.

- What if China replaces the US and Saudi Arabia's main customer?

This eventuality may be unlikely, but it is certainly not out of the question. It is unlikely because from the Saudi perspective the best way to sell a significant quantity of crude oil is through diversification of markets. For this reason, Saudi Aramco sales are divided roughly in thirds between the Western Hemisphere (most the US), Europe, and East of Suez markets.

There are, however, potential circumstances in which this division of sales into directed markets could cease to be a cornerstone of Saudi petroleum policy. For example, the Saudi government might come to realize that there are costs associated with this policy. On average, the revenue generated by sales to the United States is lower in comparison with sales to Europe or the Far East. The reason for this as spelled out in the report, are the higher costs of transportation and the more competitive nature of US markets. It could be expected that the marketplace left to its own devices would probably result in a halving of Saudi sales to the US. This would reduce Saudi sales to the US to some 850,000 b/d from the current average of 1.7 mb/d. This is roughly similar to recent levels of Iraqi oil sales to the US. Saudi Arabia would, under this scenario, become the #5 or #6 supplier to the US.

Another way this could occur is by Saudi Arabia shifting its oil market policy, which in the past has avoided spot market sales to a policy that intentionally fosters spot market sales. The Kingdom would do this, perhaps, in order to have its major crude stream – Saudi Arabian Light Oil – become the world’s marker crude, replacing the current markers, North Sea Brent and US-based West Texas Intermediate crude stream. Such a step could not be ruled out, since there are clear market advantages that stem from having a crude oil act as the marker for pricing all of the world’s other crude stream. Here, again, the result would almost certainly be a decline in Saudi sales to the US.

In such a changed market, China could well become the number one customer for Saudi Arabia. And, in such an environment, it might be the case that in order to help secure its market share in China, the Saudi government would shift its arms purchases toward Beijing and, along with that, shift its foreign policy toward accommodating China’s preferences.

- What if the US tries to reduce the prominence of Saudi oil in the US crude slate?

Like the scenario depicted above, this too is unlikely, but it is by no means an impossible one. It is unlikely because the US government has no clear mechanism for discriminating among sources of supply, and decisions on supply are left entirely to the functioning of the market and the preferences of individual refiners. Thus, Saudi Arabia can, by itself, target whatever level of sales it wants to direct to the US market and, so long as Saudi Aramco prices its crude oil to displace other crude streams entering the US market, it can maintain its market share.

However, it is not impossible to imagine shifts in US policies. Two sorts of shifts are possible. One change in policy would involve a combination of supply and demand side policies that would result in a substantial reduction rather than a growth in the US appetite for crude oil imports. In the aftermath of September 11th, it is conceivable that the US would start to pursue policies that could substantially reduce the role of the oil in the transportation sector. Raising automobile efficiency standards could reasonably reduced imports by 1 million b/d or more within seven years. Enhanced R&D in fuel cell technology and hybrid vehicle technology, combined with a federal procurement program to assure that all US government owned vehicles were fueled by these non-conventional supplies could shave another 1 mb/d from imports within seven years. Under these circumstances, the US would not only cease to be the high growth market for foreign oil. Its market would actually shrink, making it significantly less attractive for any major supplier, including Saudi Arabia.

A second route that could be taken toward the same end is the adoption by the US of a discriminatory import policy. One proposal being vetted, for example, would involve a free trade area in oil for countries that allowed reciprocity in upstream investments. Those not allowing upstream investments in their oil sectors would, under the scheme, be required to store oil in the United States equivalent to 90 days or more of average imports. Such a policy would impact very few countries, among them Saudi Arabia, Kuwait and Mexico. A policy shift in this direction would definitely be viewed as a hostile political act by the oil exporters affected by it.

There is little doubt that US action could make oil sales to the US considerably less attractive in the future than they have been in the past, and that this could impact Saudi policy and push the kingdom toward bilateral undertakings with China and potentially other oil importing countries.

On the other hand, trends are likely to move in a different direction and these could well be influenced in ways that are more amenable to longer-term US interests.

As China becomes more dependent on new sources of supply from long-haul exporters, it is more likely to be concerned with ways to mitigate its vulnerabilities. The two vulnerabilities of concern to China will be increasingly identical to the two vulnerabilities of concern to the US. These are vulnerability to the economic impacts of supply disruption and political vulnerability to accommodate the foreign policies of individual supplier countries.

China will, under these conditions, confront exactly the same issues that were confronted by IEA countries 25 years ago. These will include the following:

- How can the government foster diversification of oil supplies to mitigate the two vulnerabilities listed above?
- How can the government foster diversification of fuels so as to reduce dependence on oil?
- What steps can be taken to build strategic petroleum stocks and to coordinate use of such stocks with other countries?

It should therefore be in the US interest to foster mechanisms that lead China to take the measures that are required to mitigate market risks. Competitive conditions, especially from Russian and Central Asian suppliers, should assist Chinese firms in seeking alternative supplies to those from Saudi Arabia and other Middle East oil producing countries. But above and beyond competitive markets, the US should try to find ways to support Chinese efforts to build strategic storage and to coordinate draw down policy with the US and other IEA countries.

In short, enhanced and tightening ties between China and Saudi Arabia with respect to energy trade and investment could have a negative impact on both US-China and US-Saudi relations. But these consequences are not at all likely. The most likely consequences of heightened China-Saudi ties are those that will have benefits for the US and for global stability, even if there is a loss of US influence over the Kingdom as Saudi Arabia looks to the growing oil markets of East Asia. China will almost certainly have an increased concern over the stability of the Middle East region and on the protection of long haul sea-lanes. Changed circumstances are likely to push China toward greater cooperation with the US in all of these regards.

Appendix I: Additional Tables

Table A
China's Oil Production by Field

<i>Field</i>	<i>Province</i>	<i>Region</i>	<i>1996 Output (thousands b/day)</i>
Daqing	Heilongjiang	Northeast	1120.2
Shengli	Shandong	North	582.3
Liaohe	Liaoning	Northeast	300.9
Nanhai East	N/A	Offshore	234.6
Xinjiang	Xinjiang	West	166.0
Huabei	Hebei	North	93.4
Dagang	Shandong	North	86.8
Zhongyuan	Henan	North	80.0
Jilin	Jilin	Northeast	74.0
Tarim	Xinjiang	West	62.1
Tu-Ha	Xinjiang	West	58.4
Changqing	Gansu	Northwest	55.0
Bohai	N/A	Offshore	42.5
Henan	Henan	North	37.4
Qinghai	Qinghai	West	28.0
Nanhai West	N/A	Offshore	22.9
Jiangsu	Jiangsu	Lower Yangtze	21.4
Yanchang	Shaanxi	Northwest	17.6
Jiangnan	Hubei	Middle Yangtze	17.3
Jidong	Hebei	North	11.4
Yumen	Gansu	Northwest	8.6
Sichuan	Sichuan	Southwest	4.2
Anhui	Anhui	Lower Yangtze	1.6
Dian-Qian-Gui	Yunnan	Southwest	1.4

Table B
Daily Production in Chinese Major Oil Fields by
Region, Province and Chinese Company,
As Reported by Field Administration and Company,
1998-2000
(Thousand barrels per day)

Field/Region	Province	Company	1998	1999	2000	1998 %Total	2000 %Total	2000/ 1998
Northeast			1493.2	1462.2	1424.1	50.8	47.9	.953
Daqing	Heilongjiang	CNPC	1133.9	1109.5	1079.0			.951
Jilin	Jilin	CNPC	80.8	77.4	76.4			.945
Liaohe	Liaoning	CNPC	278.5	274.3	268.7			.964
North			745.3	713.2	722.3	25.3	24.3	.969
Shengli	Shandong	Sinopec	531.0	509.0	519.0			.977
Zhongyuan	Henan	Sinopec	78.0	72.0	73.0			.935
Dagang	Hebei	CNPC	86.5	82.5	80.5			.930
Henan	Henan	Sinopec	37.1	(37.1)	36.9			.994
Jidong	Hebei	CNPC	12.7	12.6	12.9			1.015
East/Yangtze			41.8	41.8	51	1.4	1.7	1.236
Jiangsu	Jiangsu	Sinopec	25.1	(25.1)	30.9			1.231
Jianghan	Hubei	Sinopec	15.1	(15.1)	19.2			1.271
Anhui	Anhui	Sinopec	1.6	(1.6)	(1.6)			(1.000)
Northwest			121.9	137.9	144.0	4.1	4.8	1.181
Changqing	Gansu	CNPC	81.4	87.6	94.5			1.160
Yanchang	Shaanxi	CNPC	32.5	42.3	41.3			1.270
Yumen	Gansu	CNPC	8.0	8.0	8.2			1.025
West			356.1	400.6	421.7	12.1	14.2	1.184
Xinjiang	Xinjiang	CNPC	178.5	184.1	188.5			1.056
Tarim	Xinjiang	CNPC	78.8	85.7	89.0			1.129
Tu-Ha	Xinjiang	CNPC	63.6	63.6	61.5			.966
Qinghai	Qinghai	CNPC	35.2	38.0	40.0			1.136
Tahe	Xinjiang	Sinopec	0.0	29.2	42.7			(n.a.)
Southwest			5.3	5.1	4.6	<.1	<.1	.867
Sichuan	Sichuan	CNPC	4.3	4.0	(4.0)			(.930)
DianQianGui	Yunnan	Sinopec	1.0	(1.0)	.6			.600
Offshore			170.9	168.3	200.1	5.8	6.7	1.170
Nanghai East	(South)	CNOOC	105.5	88.0	90.0			.853
Nanghai West	(South)	CNOOC	20.3	35.1	46.4			2.285
Bohai	(East)	CNOOC	45.1	45.2	63.7			1.412
Total			2934.5	2929.1	2968.5	100.0	100.0	1.011

Note: Figures in parentheses represent estimates based on previous year production levels; figures derived using conversion ratio of 7.3 barrels per ton; percentages do not total to 100 due to rounding; figures from CNPC 2000 page 74; Sinopec 1999 pp. 274, 279, 283, 287, 291, 293, 296; Annual reports and SEC forms submitted by PetroChina, Sinopec and CNOOC in 2000; numerous energy sector news sources.

Appendix II: Calendar of Diplomatic Exchanges Between China & Saudi Arabia

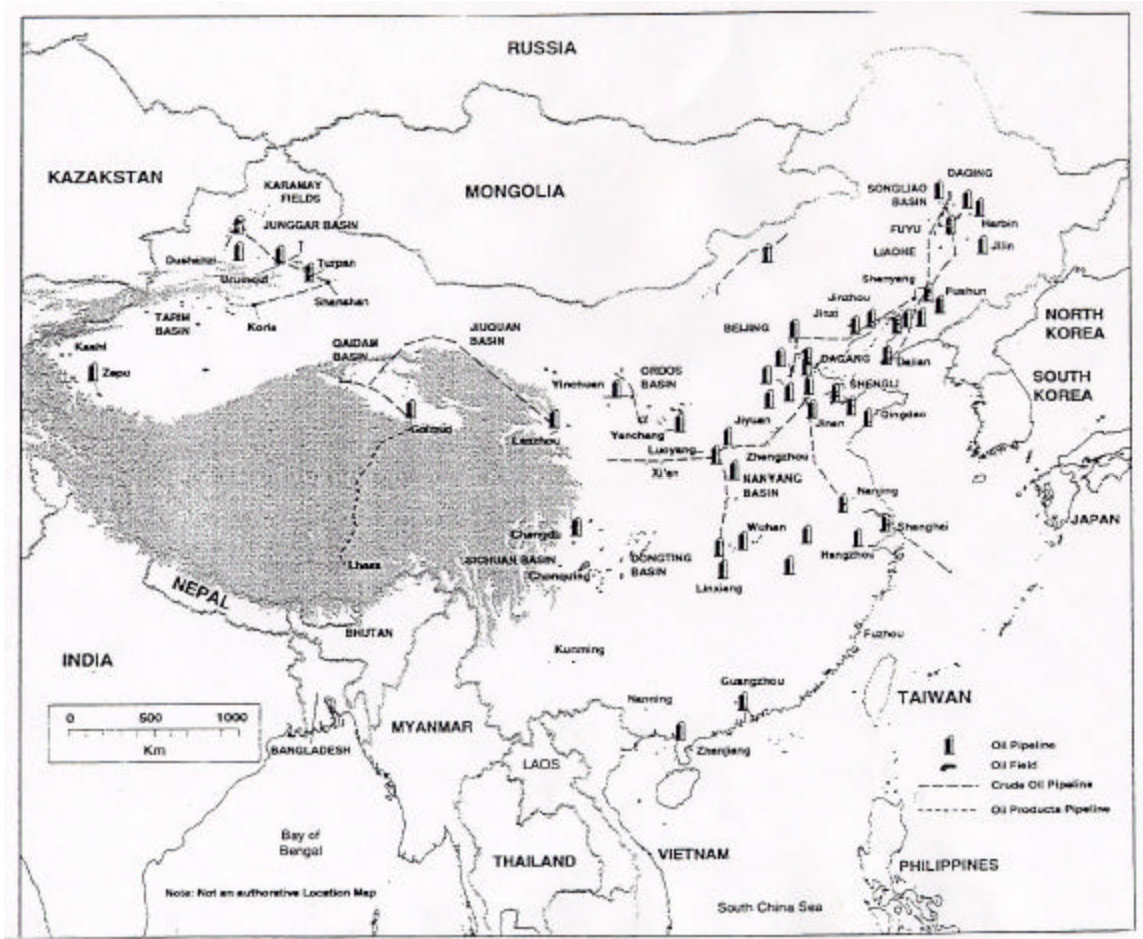
A number of diplomatic visits and actions over the last several years prove the increased interaction between the two states:

- On April 18, 1999, a party of high-level Saudi representatives, including Prince Salman bin Abdulaziz, Governor of Riyadh region, and Prince Sultan bin Salman bin Abdul Aziz, visited the Mayor of Beijing and a number of officials. The Chinese Deputy Foreign Minister for the Middle East Affairs, Gee Beiding, claimed that the economic relations between the Kingdom and China were strong and confirmed that these relations depended on co-operation in petroleum trade, the diversity of quality Chinese products in the Kingdom's market and co-operation in the manpower field.⁵³
- On August 14, 1999, Saudi Arabia sent a 15-person delegation to the China International Investment and Trade Fair. The stated goal was to foster greater non-oil trade and investment between the two countries.⁵⁴
- On September 9, 1999, the Saudi Minister of Commerce, Osama bin Jaafar Faqih, met with China's Council of State Woo Yi. Both expressed intense interest in bilateral trade, investment, and technology transfers.⁵⁵
- On October 25, 1999, the Saudi Cabinet of Ministers approved three agreements of co-operation between the Saudi Arabia and China. First, the Minister of Education was authorized to sign an agreement of cooperation between the two countries. Second, the Minister of Information was authorized to sign an agreement of cooperation between the Minister of Information of the Kingdom and China's Broadcasting and Television Corporation. Finally, the Minister of Information was authorized to sign an agreement of cooperation between the Saudi Press Agency and the Chinese News Agency of Shenhua.⁵⁶
- On October 31, 1999, Chinese President Jiang Zemin visited Saudi Arabia. This was the first visit ever by a Chinese President to Riyadh. He and his highest-most-level attendants met with the highest officials in the Kingdom. A number of joint committee meetings followed. Statements were made to the effect that both countries wanted their bilateral trade to increase, particularly in petrochemicals and energy; joint operational and investment ventures were discussed; mutual scientific and technology issues were addressed; the importance of coordinating their positions in the international forum, particularly on issues related to monetary policy and finance, was underscored; both sides expressed rejection of terrorism in all its forms, and underscored the importance of international coordination in combating terrorism, especially through the United Nations, of which various re-structuring schemes were discussed; mutual

- encouragement for a stable peace between the Israelis and Palestinians was expressed; a joint communiqué was issued on the establishment of diplomatic relations with the People's Republic of China which stated that the Government of the People's Republic of China is the legal and sole government representing the entire Chinese people and that Taiwan is an integral part of the Chinese territories; finally, much discussion was had of the historical, cultural, and economic ties that make cooperation between the two countries so inevitable and mutually beneficial.⁵⁷
- On February 15, 2000, Dr. Fouad Al Farsy, Saudi Minister of Information, visited Beijing to discuss cooperation in information services between the two countries.⁵⁸
 - On March 6, 2000, Saudi Arabian officials announced positive economic growth numbers as well as a list of the Kingdom's top ten trading partners, in order of size of trade: United States, the United Kingdom, Japan, Switzerland, Germany, France, Italy, China, South Korea and India. [NOTE: China stands out on this list as the only country with at-times contentious relations with the United States].⁵⁹
 - On August 7, 2000, the Saudi Cabinet agreed to the memorandum of understanding signed by King Abdul Aziz City for Sciences and Technology of the Kingdom of Saudi Arabia and the State Commission for Science and Technology of the Peoples Republic of China.⁶⁰
 - On August 9, 2000, a joint venture was established between Saudi Arabia and China to manufacture fiber optics. This will be the first joint venture between two private companies working separately in the Kingdom and China. Many more joint ventures are anticipated, the participants stated.⁶¹
 - On October 2, 2000, the Saudi Cabinet authorized the Minister of Interior to draft an agreement with China for mutual security cooperation activities.⁶²
 - On October 12, 2000, a meeting commenced in Beijing between Prince Sultan and the Chinese Minister of National Defense. The official line on this meeting was that 1) no military deals were discussed, 2) the meeting had focused on the provision of advanced medical, educational, and public services for Saudi citizens, and 3) the new investment climate in the Kingdom would lure more Chinese companies. The Saudi Minister also found it necessary to state that although no Saudi military students would be training in China any time soon, for the last 12 years the Chinese have always been forthcoming in military materiel assistance.⁶³
 - On October 17, 2000, at a conference in Beijing of the highest officials from both countries, the Kingdom and China signed a joint communiqué that reiterated the positions stated in the meetings of October 31, 1999, calling for the further development and enhancement of their relations in the various economic, commercial, industrial,

- technological, technical and security fields, and expressing shared political views vis-à-vis terrorism, the United Nations, Taiwan, and Israel.⁶⁴
- On April 10, 2001, Saudi Aramco renewed its contract with International China Limited for petroleum and chemical materials. This contract stipulates increasing quantities of crude oil passing from Saudi Aramco to ICL. Aramco is the biggest crude oil supplier to the Chinese company.⁶⁵
 - On June 11, 2001, the Saudi Cabinet authorized the Minister of Agriculture to sign two draft agreements on cooperation in the fields of agriculture and water resources between Saudi Arabia and China.⁶⁶
 - On November 15th, 2001, Saudi Aramco, ExxonMobil, and Fujian Petrochemical took another step toward the ultimate completion of a 240,000 b/d upgrade of a major Fujian refinery by signing an agreement for a Joint Feasibility Study (JFS).⁶⁷

Appendix III: China Map



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¹ Coal consumption and production has declined significantly since 1996, due in part to a concerted effort by the Chinese government to close inefficient mines and by central and local authorities to respond to environmental pressures. The high cost of transporting coal by rail to distant regions, especially in the high growth coastal provinces, has also discouraged coal use under sector deregulation. In some major markets, coal is now sold at auction at market prices not fixed by the central government, and transportation subsidies are disappearing. Coal production stood at 1 billion tons in 1999, down from 1.4 billion tons in 1996. China has targeted coal use to fall to 64% of primary energy mix by 2020, mostly replacing it with natural gas, which will rise to 10%.

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³ Asia Pacific Consulting.

⁴ “Other” refers to the agricultural and chemical industries. The relative sizes of these industries are small when compared to the industrial sector.

⁵ Transformation loss is the energy that is used up in the production of delivered energy goods such as electricity and domestically produced petroleum products. For the purposes of forecasting, transformation loss is assumed to hold to its observed value in 1995, about 21% of primary requirement. Historically (1973–1995), this number has been approximately constant, with only minor variation.

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