

The Recent Financial and Operational Situation Conditions of the Chinese Oil Majors¹

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I. Introduction

In recent years, the three largest oil companies (CNPC, Sinopec, CNOOC) in China have grown into important players on the international energy market and are ranked ninth, 33rd and 76th, respectively in rankings of the world's top 100 oil companies (Petroleum Intelligence Weekly) in 2001. Together with the fast-growth of China's oil and energy markets, attention is being increasingly placed on the major Chinese oil companies.

With the big three oil companies, or China National Petroleum Corporation (CNPC), China National Petrochemical Corporation (Sinopec) and China National Offshore Oil Corporation (CNOOC) counted as the Chinese oil majors, this paper analyzes the actual state of their financial and operational results in recent years, then assesses what has characterized their development.

II. Actual state of Chinese oil majors' Operational and financial results

In 2002, along with the rapidly shifting Chinese economy to a market system, the Chinese oil industry also continued reforms, particularly "personnel cuts and efficiency improvements" and made concentrated efforts to expand and upgrade capacity through retrofitting/improvement and introduction of new technology. The management and retail sectors were vastly improved. As a result, principal financial results as a whole proved better than in the previous year, with total earnings amounting to 122.33 billion yuan (Chinese yuan), up 9.57% over 2001, and turnover totaling 1,458.69 billion yuan, up 8.73%. By company, CNPC increased its earnings by 0.73% over 2001 to 53.37 billion yuan, Sinopec up 3.58% to 17.577 billion yuan, and CNOOC up 14.44% to 11.045 billion yuan (Table 1).

1. Upstream sector

In 2002 China's total crude oil output grew 3.3% over a year ago and reached 170 million tons. The rise resulted from greater production from the western oilfields, largely in Xinjiang, as well as from offshore oilfields, which more than offset plateauing/falling output from the principle oilfields

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located in the east that are maturing/aging. Annual output from the Xinjiang oilfield reached 10 million tons for the first time in 2002 and that from the Tarim Basin entered the 5-million-ton mark.

By company, in 2002 CNPC produced a little more crude oil and natural gas than 2001, the total amounting to 118 million tons and 23.3 billion cubic meters (bcm), respectively. Proven reserves amounted to 430 billion tons and 335.2 bcm, and recoverable reserves to 420 billion tons and 164.9 bcm, respectively. In addition, overseas voluntary development enabled CNPC to acquire equity crude oil of 10.18 million tons, up 21.9% over 2001.

Crude oil and natural gas production by Sinopec increased by 0.2% and 8.4% over 2001 to 38 million tons and 5.00 bcm respectively. Additional proven reserves of 213 million tons of crude oil and 89.8 bcm of natural gas were also added in 2002.

Table 1 Financial Results for the three major Chinese oil Companies (2002)

Unit: 100 million yuan

Company	Turnover (Yuan) (% increase over 2001)	Earnings (Yuan) (% increase over 2001)
CNPC (China National Petroleum Corporation)	3498.63 (3.96%)	533.71 (0.73%)
Sinopec (China National Petrochemical Corporation)	3938.57 (13.46%)	175.77 (3.58%)
CNOOC (China National Offshore Oil Corporation)	391.59 (28.91%)	110.45 (14.44%)

Source: Prepared from the data published by CNPC, the Chemical Manufacturers Association and others.

With crude oil and natural gas combined, CNOOC produced 126.50 million BOE (barrels oil equivalent), up 32.6% over 2001. Of this, crude oil output grew 23% over 2001 and reached 25.13 million tons. On the other hand, CNOOC achieved greater output for lower cost. The exploration & development (E&D) cost for developing hydrocarbon resources in the Chinese offshore has been kept below \$8.48/bbl. At the end of 2002, CNOOC had 2 billion BOE of proven oil & gas reserves.

2. Downstream sector

In the refining sector, the Chinese oil companies have extensively boosted their crude oil processing capacities and throughputs in an attempt to secure greater supplies to the expanding domestic market (see Table 2).

Table 2 Big Two Oil Groups' Crude Oil Throughputs (1998-2002)

Unit: Million tons/year

	1998	1999	2000	2001	2002
CNPC	68.95	75.27	84.60	80.77	87.73
Sinopec	80.60	91.36	111.77	107.59	112.19

Source: Prepared from the data published by CNPC, Sinopec and the Chinese Oil Chemical Manufacturers Association.

In 2002 CNPC revamped its production system in the downstream sector by taking drastic steps to retrofit or upgrade the technologies in use. Namely, with 17 facilities/processes newly built and 34 existing facilities refurbished, the company enhanced its processing capacity and improved product quality. These efforts have allowed the company to better balance production and marketing. As a result, the production cost has been lowered from 138 yuan to 136 yuan per ton.

Sinopec committed itself to optimal allocation of production resources and drastically changed its product mix so that the company could upgrade product output in a way to better meet market needs. Particularly production of high-spec gasoline reached 6.5892 million tons, or 31.35% greater than in 2001.

When combined, CNPC and Sinopec had primary and secondary refining capacities of 250 million tons in 2002, while actual crude oil throughputs were about 200 million tons and the operating rate of refineries averaged nearly 80%. This is mainly attributable to rationalized production by oil companies, closures of inefficient/marginal refineries and improving the utilization rate of refineries.

CNOOC has also been aggressively entering the downstream sector. Zhonghai Bituminous Corporation a subsidiary of CNOOC, expanded its annual production capacity to 500,000 tons through an asphalt project. Also, under an agreement made with Royal Dutch Shell, construction of a petrochemical joint-venture project started in Huizhou City, Guangdong. Among others, in the form of joint ventures between CNOOC and foreign companies, LNG projects, one in Guangdong and another in Fujian, were signed with the expectation of starting operation from 2005.

In the marketing sector, Sinopec sold 70 million tons of petroleum products in 2002. Of this, the retailed portion amounted to 34.80 million tons nationwide, up 14.3% over 2001. Sinopec's retail amount accounted for 72% of total consumption nationwide. Out of the 67.74 million tons of petroleum products sold nationwide, the retailed ones were 30.43 million tons, up 27.1% over 2001. Meanwhile, product exports by Sinopec were 3.73 million tons.

Table 3 Operational Results of Big Two Groups, Sinopec & CNPC (2002)

Unit: Million tons

Item	Sinopec (nationwide share)		CNPC (nationwide share)	
Crude oil output	38.0	22%	117.6	69%
Refining throughputs	110.0	54%	89.5	48%
Product sales	70.0	58%	56.7	43%
Retailed	34.8	68%	12.0	23%
Wholesaled	35.2	...	39.0	45%

Note: The shares represent the figures published by each company.

Source: Prepared based on China OGP, Vol. 11 No.2, January 17, 2003; China OGP Vol. 11 No.4-5, March 1, 2003.

Petroleum products sold by CNPC in 2001 totalled a hefty 53.91 million tons, which sent the company's domestic market share rising from 40.6% in 2001 to 43% in 2002. In 2002 the company sold a total of 56.70 million tons, accounting for 43% of product sales nationwide. Retailed and wholesaled amounts were 12.00 million tons and 39.00 million tons, respectively. In terms of nationwide share, these represent 23.4% and 45% each (see Table 3). The sales amounts increased by 5.2% over 2001.

As of 2001 service stations (SSs) owned by CNPC and Sinopec numbered 12,102 SSs and 28,246 SSs, respectively, representing a nationwide share of 23.4% and 45% each (see Table 4).

At present, in preparation for opening the retail and wholesale markets to foreign competition in 2004 and 2007 respectively. (as a result of China becoming a member of the WTO), CNPC and Sinopec are aggressively endeavoring to expand their product marketing networks before these dates. Through concentrated efforts in construction/acquisition as well as management improvement of SSs, the two groups are vying with each other to grab a greater market share.

Table 4 SS Distribution in China (as of late 2001)

	Nationwide (share %)	Southern Areas (share %)	Northern Areas (share %)
CNPC	12,102 SSs (15%)	7%	(32%)
Sinopec	28,246 SSs (35%)	51%	(2%)
Others	...	42%	(66%)
Foreign-affiliated	300 SSs (0.4%)
National total	80,000 SSs (100%)	55,000 SSs (100%)	25,000 SSs (100%)

Note: In 2002 CNPC (PetroChina) increased the number of SSs to 13,160, either acquired or newly built.

Source: Gou Si Zhi, "Energy Economics," 2003, Summer Issue

III. Principal Characteristics of Management of Chinese Oil Majors

In 1998 CNPC and Sinopec changed from the conventional separated business unit style to a vertically integrated company (upstream through to downstream). Under the new oil industry's structure, the big three oil groups, including CNOOC, are endeavoring to strengthen corporate capabilities and bolster competitiveness. In the hopes of becoming internationally competitive companies like global majors, a number of management production measures have been employed, such as:

1. IPO to raise funds from global sources

As a result of the rapid shift of the Chinese economy to a market orientated system. China's big three oil groups have listed their subsidiaries on the international stock market starting from the spring of 2000 (see Table 5).

Table 5 Outline of Listings of Big Three Oil Groups

Parent company		CNPC	Sinopec	CNOOC
Company listed		PetroChina	Sinopec Corp.	CNOOC Ltd.
Date of listing		April 2000	October 2000	February 2001
Number of shares issued		17.558 billion shares	18.0385 billion shares	1.64 billion shares
Proceeds from the listing		\$2.89 billion	\$3.7385 billion	\$1.26 billion
ADS price		\$16.44	\$20.645	\$15.4
Exchanges listed		Hong Kong, New York	Hong Kong, London, New York	Hong Kong, London, New York
Equities held by parent company		90%	Sinopec 53%, China-affiliated banks & others 27%	67.5%
Investors	ExxonMobil	\$620 million, or about 20% of IPO	\$430 million, or about 40% of IPO	\$200 million, or 13% of IPO
	BP	-	\$430 million, or about 14% of IPO	\$300 million, or about 20% of IPO
	Shell	-	\$200 million, or about 20% of IPO	-
	Hong Kong-based investors and others	\$350 million, or about 11% of IPO	\$200 million, or about 5.3% of IPO	-

Source: Prepared from Sinopec, "Annual Report on Economics of the Chinese Petrochemical Industry," 2002, and East West Trade News, Ltd., "The Oil and Petrochemical Industries of China," 2000.

In November 1999, as a result of the above mentioned group restructuring, a profitable sector of CNPC was made independent and incorporated into China Oil and Natural Gas Corporation (PetroChina), of which shares were listed on the Hong Kong and New York stock exchanges in April

2000.

Sinopec interspersed its profitable sectors with extra-fine assets from unprofitable ones in February 2002, then incorporated them into Sinopec Corp., a joint-stock company, which was listed on the Hong Kong, New York and London markets in October of the same year.

CNOOC, a firm specializing in E&D of offshore oilfields, incorporated China Offshore Oil Corporation (CNOOC Ltd.) in October 1999, which was also listed on the Hong Kong and New York exchanges.

The Chinese state-run oil companies listed their shares on exchanges abroad so that they could raise funds through the international capital markets, strengthen commitments to their prioritized growth sectors, make greater investment more efficiently, and seek strategic alliances with foreign companies.

As shown in Table 5, China's three main oil companies raised a total of over \$8 billion through their initial public offering (IPO), which was mainly appropriated from investment made by the major oil companies. In addition, the majors' investment in these IPO's helped China build up strategic alliances with these companies in order to advance the development of the domestic oil industry. Taking the pipeline sector as an example, CNPC made an alliance with Shell, one of the investors in its IPO, and is carrying out a natural gas pipeline construction project, "Western Gas to East," funded by IPO proceeds and helped by expertise including technological/management know-how from Shell.

In the refining sector, Sinopec, jointly with ExxonMobil, one of their strategic IPO allies, plans to expand a Guangdong refinery by virtue of the partner's technology and funds so that the company can increase its capacity to process sour crudes from the Middle East.

In the retail sector too, the Chinese oil groups are advancing strategic alliances with majors in hopes to introduce their funds, brands and marketing know-how. In April 2001, PetroChina and BP, incorporated a joint venture specializing in petroleum product marketing. As of 2002, a joint venture between Sinopec and BP has already installed and operates 45 SSs in Zhejiang Province. Within the next five years, Sinopec intends to have an additional 500 SSs installed and operated across the province through its alliance with BP.

CNOOC, allied with Shell, began entering the downstream sector through the aforementioned petrochemical project, by putting the partner's management resources to best use.

In this way, positively tied up with foreign oil companies, typically majors, the Chinese oil groups have constructed strategic alliances helpful in securing funds, technology, management and production expertise necessary for their prioritized growth sectors. The alliances have proved effective in facilitating technology transfer and strengthening their corporate capabilities.

2. Management efficiency increased by restructuring production system

After their reforms/restructuring in 1998, the Chinese oil groups have since 2000 committed to the “separation of the main business units from supplemental units, that is, to part the profitable sectors from unprofitable ones and get the former incorporated. Thus, the three corporations of PetroChina, Sinopec Corp. and CNOOC Ltd. were established as described above.

In case of CNPC, 480,000 employees out of the 1.5-million workforce were transferred to PetroChina as of April 2000. Also, as part of restructuring, PetroChina made 38,400 workers redundant after its listing in 2000 and an additional 16,600 workers in 2001, thus slashing a total of about 55,000 jobs as part of their cost-cutting measures. Moreover, in 2002 CNPC simplified its multi-tiered production/management system and formed a production system consisting of “oilfield branch-company – mining block – operating well.” Also its refining firms are advancing horizontal management of production fronts by getting middle-standing divisions merged with production fronts. Reforms/restructuring of the marketing system also started to be undertaken. That is, the conventional system, which consists of “a head office atop the regional, provincial, municipal and local marketing offices,” was simplified by scrapping local ones.

By taking the occasion of restructuring of the two big groups in 1998, Sinopec set its profitable and unprofitable sectors apart. Then, by incorporating the former as a joint-stock company, Sinopec has been adjusting employment in an attempt to increase management efficiency. By 2001 the company had cut some 213,700 jobs. The personnel cut was as drastic as accounting for 18% of the total workforce. Additionally, in 2002, Sinopec slimmed the middle layers of the refining/marketing system by instructing Western, Southern and Shanghai Offshore Oil and Gas Corporations to reorganize their scattered E&D firms, and thus increase production/management efficiency. Particularly from the viewpoint of state and social stability, the company is trying to balance employment through a combination of layoffs and intra-company transfers. Taking 2002 as an example, 11,000 workers were either dismissed or transferred to other sectors.

After listing its subsidiary (CNOOC Ltd.) in February 2001, CNOOC reorganized ten units specializing in E&D business under its control into two corporations in 2002 and got them listed at home and abroad. Their production systems were further streamlined. Also at its oil fields, CNOOC integrated production and distribution/port management services into one unit and thus improved profits. In 2002 its five blocks realized earnings of as much as 53.56 million yuan.

3. Concentrated efforts on technology retrofitting and R&D

In 2002 China’s big three oil groups drove R&D forward by virtue of foreign technology/equipment introduced during the 1990s. The three oil companies, including CNPC, are contributing to the development of the oil industry by making concentrated efforts on technology

control and improving production/management levels.

Cited below are some of the efforts made by CNPC. With its Science and Technology Development Division as the central figure, CNPC has organized/managed technological R&D and promoted application of R&D results to the production sector. The projects carried out by the company in 2001 included “Priority Basins’ Oil & Gas Resource Assessment” and “Medium/Deep-Sea Ultra-viscous Oil Development” in the upstream sector and “Clean Product Production Technology” and “Development of Residual Oil Hydrogenation-Related Technologies” in the downstream sector, which all yielded great outcomes. For example, in 2001 CNPC achieved 430 million tons of proven crude oil reserves and 1.05 billion tons of probable reserves, and increased production of ultra-viscous oil by 1.20 million tons/year from Shu (a block in the Liaohe oilfield), reducing the development cost to 400 yuan/ton. In the downstream sector, CNPC lowered alkene by 8~12% by using an alkene-reducing catalyst and increased the octane number of gasoline to over 90. Among others, CNPC became capable of hydrogenating residual oil of 2 million tons a year and retrofitted and upgraded the existing capacities. These all demonstrate that China has further upgraded refining technology and expanded production capacity.

The Science and Technology Development Division of CNPC concentrated its efforts on technological control/management and endeavored to raise the technological level by taking specific measures. Chief measures were (1) restructuring individual specialty companies’ science & technology management sectors and linking science & technology laboratories to production fronts, (2) R&D on priority technologies, and (3) introduction of a R&D-project bidding (a patent and incentive system).

Concentrated R&D efforts made by individual oil companies have been greatly contributing to the development of the upstream and downstream sectors. In 2002, CNPC discovered five 100-million-ton-class oil/gas fields in the western region, of China (Songliao Basin, Bohai among others) and gained additional crude oil production capacity of 10.91 million tons/year. Sinopec for its part increased its crude oil production capacity by 5.54 million tons, while CNOOC discovered an additional 14 oil/gas fields and produced 14% or more oil and gas over 2001. In 2002 China’s crude oil output grew by 2.45% from 2001 to 169 million tons/year. In the downstream sector, China as a whole increased its crude oil throughputs by 4.6% to 220 million tons/year.

4. Foreign upstream investment

The big three oil company groups have further advanced their globe position by investing in a number of upstream projects abroad. Since early 1990, and particularly from the start of 2000, they have steadily progressed international business operations, typically overseas exploration/development (see Table 6). Amid such moves, especially since the second half of the 1990s, the Chinese oil companies have consolidated their position in Africa, Central Asia and

Southeast Asia. So far CNPC, Sinopec and CNOOC have concluded a total of 61 projects (41, 11 and 9, for each company respectively) of oil E&D and the like around the world, including Africa, the Middle East, Central Asia, Southeast Asia/Oceania, North and South America (Table 7). China has already made equity participation and acquired E&D interests in such countries/areas as Sudan, Indonesia, Malacca, South America, the Gulf of Mexico and Central Asia. At present, the remaining recoverable crude oil reserves of China's major E&P projects abroad exceed an estimated 400 million tons on an overseas equity basis, and natural-gas reserves of 800 bcm. Since 2000, big overseas operations, (largely E&D), initiated by the three companies totaled 33 projects, accounting for 54% of the total (61) overseas projects currently under way. By late 2000 CNPC had already invested a total of 15.6 billion yuan in the three regions of the Middle East/North Africa, Russia/Central Asia and South America. In 2002 the company produced 21.29 million tons of crude oil overseas, up 23.8% over 2001, and acquired 10.14 million tons of equity crude oil, up 18% over a year earlier. CNPC set an overseas crude oil production goal of 35 million tons to be achieved by 2005. On top of E&D activities, CNPC, Sinopec and CNOOC, by forming international business corporations, have positively undertaken oil/gas-related works/services, and pursued global management by becoming active across the world from developing countries to industrialized nations. Thus, by gradually accumulating global management resources, such as experience, know-how and technology, they are gaining international competitiveness. Moreover, the skills and experience gained from overseas operations is also being incorporated into management practices at head office in China. Therefore, the experience gained from overseas operations has enabled the Chinese companies to strengthen their management practices and enhance overall competitiveness.

IV. Conclusions

As described far, since their restructuring/reforms in 1998, the Chinese oil groups have developed remarkably, which reflected their commitments to globalization of fund raising, higher efficiency/globalization of management/production, and technology introduction/development, all made in their effort to increase international competitiveness and become oil majors. Their operating indicators, like crude oil output, refining capacity and crude oil throughputs (Tables 1 & 2), demonstrate they are already of world class size. But, in terms of technological capabilities, such as overall crude oil production cost, refining cost and secondary capacity (Tables 8 & 9), and overall efficiencies from marketing to management/production, they are still well behind the majors. Therefore, in order to survive intensifying competition with foreign oil firms, including the majors, on the oil market opened/deregulated along with China's entry to the WTO, they have to continue to strive for more efficient management/profit augmentation while stepping up the efforts for management/production streamlining and cost cuts. Also it is essential for the Chinese oil companies to acquire more technology/management experience from industrialized nations and

actively introduce these technologies (absorption/upgrading), while simultaneously making concentrated R&D efforts on a corporate basis.

Table 6 China's Major Overseas Projects, Notably Voluntary E&D Activities (by Region)

Region	Country	Project Outline	Year of agreement signed
South/ Southeast Asia	Thailand	Development of Sukhothai Blocks 1/25, 26, 23	1993
		Acquired Block L21/43.	2000
	Myanmar	Acquired 70% interests in 3 blocks from TG World Energy of Canada.	2001
		Contracted development of Pyay oilfield.	2001
	Indonesia	Acquired interests in the Malacca Strait.	1994
		Acquired interests in an Indonesian subsidiary from Respol-YPF.	1998
		Takeover of Indonesian assets (e.g. Jabung gas block) from Devon Energy	2002
		Oil-well cementing project	2002
		Joint construction of natural gas pipeline	2002
		Takeover of interests in Widuri Oilfield located in the northern waters, West Java, from Respol-YPF	2002
		Acquired 12.5% interests in Tanggun LNG, Indonesia.	2002
		Acquired 12.5% interests in Tanggun LNG paired with LNG purchase.	2002
		Joint E&D in Binjai Block, North Sumatra.	2002
		Took over from Amerada Hess interests in Jabung Gas Block jointly with Petronas.	2003
		CNPC Sichuan, jointly with Sinopec Star, participated in Bengara-II, East Kalimantan.	2003
		Sinopec Star, jointly with CNPC Sichuan, participated in Bengara-II, East Kalimantan.	2003
Middle East	Oman	Takeover of Wadi Asad Crude Oil Block	2002
		Acquired Mazoon-5 Block paired with the takeover of Mazoon Petragas	2002
	Iraq	Production sharing (PS) of Al-Ahdab Oilfield, some 180km southeast of Baghdad.	1997
	Syria	PS agreement signed with SPC on Kebibe Oilfield	2003
Central Asia/ Russia	Kazakhstan	Acquired 60% shares of Aktyubinskunai. To invest \$4.3 billion by 2020.	1997
		To enhance oil extraction from Uzen Oilfield (to produce over 8 million tons by 2002).	1997
		Construction of a 3,000km-long crude oil pipeline to Xinjiang (incl. 250km to Iran).	1997
		Construction of a 450km-long crude oil pipeline to connect Kenkiya Oilfield with Atyrau.	2001
		Sinopec took over from BG 8.33% interests in the North Caspian offshore blocks (incl. Kashagan)	2003
		CNOOC took over from BG 8.33% interests in the North Caspian offshore blocks (incl. Kashagan)	2003
	Sudan	PS agreement on the Muglad Basin Block 1.	1997
		PS agreement on the Muglad Basin Block 2.	1997
		PS agreement on the Muglad Basin Block 4.	1997
	Azerbaijan	Took over interests in Salyan Oil (Kursang-Karabagli Oilfield) in two times (a total of 50%).	2002
		Participated in development of Pirsagat, an onshore oilfield.	2003

		Took over from Rosco 62.82% interests in Commonwealth Gobusta.	2003
	Russia	Daqing Oil Corporation, jointly with Rosnet and Yukos, developed Verkhnechonskoye, etc.	2001
		Crude oil pipeline construction from Angarsk to Northeastern China.	2001
North America	Canada	Developed North Twing Oilfield (the first interests in overseas oilfield acquired by China).	1992
		Acquired a concession of Pouce Coupe Oilfield.	1994
		Acquired a concession of Drunhe Oilfield.	1994
		Acquired a 4% right to develop Lone Koc and Golden Lake Oilfields.	1996
	U.S.A.	Acquired interests in the Gulf offshore blocks.	1997
South America	Peru	Development of Peruvian Talara Oilfield, Lote 7	1993
		Development of Peruvian Talara Oilfield, Lote 6	1994
	Venezuela	Acquired Intercampo Norte Oilfield through the 3rd-round international bidding.	1997
		Acquired Caracoles Oilfield through the 3rd-round international bidding.	1997
		Participated in Orimulsion business to utilize heavy oil from Orinoco Belt.	2001
	Oceania	Papua New Guinea	Risk exploration contract on Western & Gulf States
Australia		MOU (memorandum of understanding) made with Chevron on acquisition of interests in Gorgon Gasfield.	2001
		Acquired 5.56% equity of North West Shelf (NWS) LNG paired with LNG purchase.	2002
Africa	Sudan	PS agreement on Muglad Basin Block 6	1995
		Crude oil pipeline construction to Port Sudan	1995
		PS agreement on Muglad Basin Block 1	1997
		PS agreement on Muglad Basin Block 2	1997
		PS agreement on Muglad Basin Block 4	1997
	Algeria	Signed a PSC agreement on development of Zaraitine Oilfield in the eastern part of the Sahara.	2002
	Tunisia & others	Agreed on joint development paired with Sinochem's takeover of Atlantisbaï (the takeover officially signed in 2003).	2002
	Libya	Acquired a right to explore oil/gas blocks.	2002
		Oil/natural gas pipeline construction.	2002
	Nigeria	Joint development of Stubb Creek Oilfield in Niger Delta with Universal Energy Resources, a local company.	2003

Source: Prepared from "The Oil and Petrochemical Industries of China," 2003 version, and "Yearbooks of Oil/Natural Gas Corporations of China," each year's edition, among others.

Table 7 Major Overseas Projects by Company

Company	Country	Project Outline	Year of agreement signed
	Thailand	Development of Sukhothai Blocks 1/25, 26, 23	1993

CNPC		Acquired Block L21/43.	2000
	Myanmar	Acquired 70% interests in 3 blocks from TG World Energy of Canada.	2001
		Contracted development of Pyay Oilfield.	2001
	Oman	Takeover of Wadi Asad Crude Oil Block	2002
		Acquired Mazoon-5 Block as a result of the takeover of Mazoon Petragas	2002
	Indonesia	Takeover of Indonesian assets (e.g. Jabung Gas Block) from Devon Energy.	2002
		Oil-well cementing project.	2002
		Joint construction of natural gas pipeline.	2002
		CNPC Sichuan, jointly with Sinopec Star, participated in Bengara-II, East Kalimantan.	2003
		Took over interests in Jabung Gas Block from Amerada Hess jointly with Petronas.	2003
	Kazakhstan	Acquired 60% shares of Aktyubinskunai. To invest \$4.3 billion by 2020.	1997
		To enhance oil extraction from Uzen Oilfield (to produce over 8 million tons by 2002).	1997
		Construction of a 3,000km-long crude oil pipeline to Xinjiang (incl. 250km to Iran).	1997
	Sudan	PS agreement on Muglad Basin Block 1	1997
		PS agreement on Muglad Basin Block 2	1997
		PS agreement on Muglad Basin Block 4	1997
	Iraq	Production sharing of Al-Ahdab Oilfield, some 180km southeast of Baghdad.	1997
	Azerbaijan	Took over interests in Salyan Oil (Kursang-Karabagli Oilfield) in two times (a total of 50%).	2002
		PS agreement signed with SPC on Kebibe Oilfield.	2003
		Took over from Rosco 62.82% interests in Commonwealth Gobusta.	2003
	Kazakhstan	Construction of a 450km-long crude oil pipeline to connect Kenkiya Oilfield with Atyrau.	2001
	Russia	Daqing Oil Corporation, jointly with Rosnet and Yukos, developed Verkhnechonskoye, etc.	2001
		Crude oil pipeline construction from Angarsk to Northeastern China.	2001
	Canada	Developed North Twing Oilfield (the first interests in overseas oilfield acquired by China).	1992
		Acquired a concession of Pouce Coupe Oilfield.	1994
		Acquired a concession of Drunhe Oilfield.	1994
		Acquired a 4% right to develop Lone Koc and Golden Lake Oilfields.	1996
	Peru	Development of Peruvian Talara Oilfield, Lote 7	1993
		Development of Peruvian Talara Oilfield, Lote 6	1994
	Venezuela	Acquired Intercampo Norte Oilfield through the 3rd-round international bidding.	1997
Acquired Caracoles Oilfield through the 3rd-round international bidding.		1997	
Participated in Orimulsion business to utilize heavy oil from Orinoco Belt.		2001	

	Papua New Guinea	Risk exploration contract on Western & Gulf States	1995
	Sudan	PS agreement on Muglad Basin Block 6	1995
		Crude oil pipeline construction to Port Sudan	1995
		PS agreement on Muglad Basin Block 1	1997
		PS agreement on Muglad Basin Block 2	1997
		PS agreement on Muglad Basin Block 4	1997
Sinopec	Iran	Exploration buy-back contract on Zavareh-kashan Block	2001
	Libya	Acquired a right to explore oil/gas blocks.	2002
		Oil/natural gas pipeline construction	2002
	Oman	Output-increase project at Mezzoon, an onshore block.	2002
	Indonesia	Joint E&D in Binjai Block, North Sumatra.	2002
		CNPC Sichuan, jointly with Sinopec Star, participated in Bengara-II, East Kalimantan.	2003
	Algeria	Development of Zaraitine Oilfield in the eastern part of the Sahara.	2002
	Tunisia/ Oman/UAE & others	Agreed on joint development associated with Sinochem's takeover of Atlantisbais (the takeover officially signed in 2003).	2002
	Kazakhstan	Took over from BG 8.33% interests in the North Caspian offshore blocks (incl. Kashagan)	2003
Nigeria	Joint development of Stubb Creek Oilfield in Niger Delta with Universal Energy Resources, a local company.	2003	
Azerbaijan	Participated in development of Pirsagat, an onshore oilfield.	2003	
CNOOC	Indonesia	Acquired interests in the Malacca Strait.	1994
		Acquired interests in an Indonesian subsidiary from Respol-YPF.	1998
		Takeover of interests in Widuri Oilfield located in the northern waters, West Java, from Respol-YPF.	2002
		Acquired 12.5% interests in Tanggun LNG, Indonesia.	2002
		Acquired 12.5% interests in Tanggun LNG paired with LNG purchase.	2002
	U.S.A.	Acquired interests in the Gulf offshore blocks.	1997
	Australia	MOU made with Chevron on acquisition of interests in Gorgon Gasfield.	2001
		Acquired 5.56% equity of North West Shelf (NWS) LNG paired with LNG purchase.	2002
Kazakhstan	Took over from BG 8.33% interests in the North Caspian offshore blocks (incl. Kashagan)	2003	

Source: The same as table 6.

Table 8 Comparison (Assessment) of Chinese Oil Companies' Upstream Competitiveness

	Weighted average	Standard	CNPC	Sinopec	CNOOC	Exxon	Chevron	Royal Dutch
Crude oil output	0.117	100	42.2	125.7	19.1	173.7	81.5	227.5
Crude oil reserves	0.113	100	50.4	165.7	16.4	69.7	31.4	97.6
E&D cost	0.26	100	64.9	71.8	75.6	118.2	165	163
Degree of technology	0.108	100	61.4	68.6	74.3	100	100	100

contribution								
Degree of technology inputs	0.072	100	83	95.8	95.8	100	108.3	112.5
Rate of cost fluctuation	0.106	100	50	60	62.5	72.5	84.5	75
R/P ratio	0.114	100	72.4	107.8	58.8	87.7	84.2	93.5
	89		53.7	85.1	52	94.6	93.1	117.6
Ranking			5	4	6	2	3	1

Source: Economic Commission of China Petroleum Society, "Collection of Sino-Japanese Symposium on Year 2001," p284

Table 9 Chinese and World Competitiveness in Oil Refining Sector (1999)

Item	China	World's advanced level
Average size (10 ⁴ t/a)	346	558
Max. single-unit capacity (10 ⁴ t/a)	500	1250
Utilization factor (%)	75.5	92.7
White-oil recovery rate (%)	66.75	73.7
Product yields (%)	90.75	93.61
Rate of refining loss (%)	1.28	0.2

Source: Prepared from IEEJ, "Japan-China Energy Forum Bulletin."

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