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## INDUSTRY OVERVIEW

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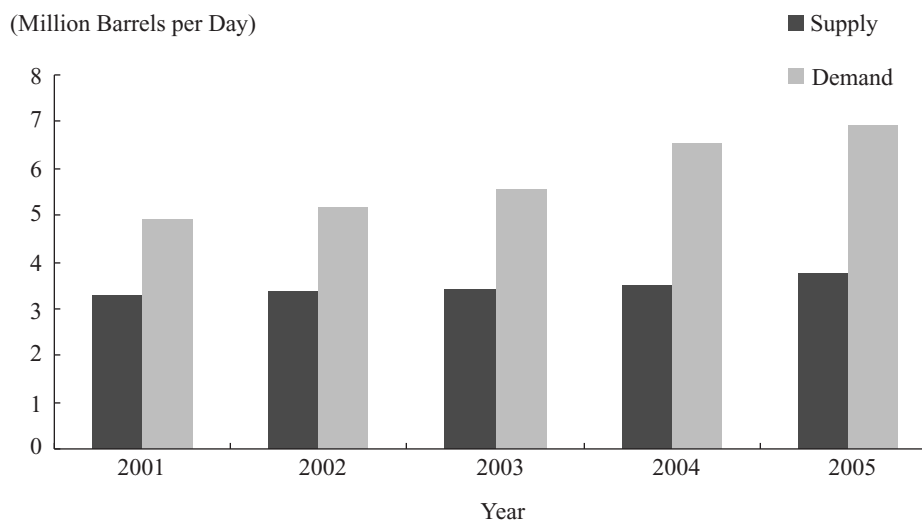
### CRUDE OIL INDUSTRY OVERVIEW

#### Introduction

Crude oil or petroleum, the raw materials for many petroleum and petrochemical products, is used to produce liquified petroleum gas (LPG), heavy fuel oil, jet fuel, diesel fuel, heating oil, gasoline or other products such as medicines, plastics, polyurethane, solvents, or many other intermediate and end-user goods. According to the EIA, approximately 80.0% of each barrel of crude oil extracted was processed as fuel in 2004 with the remainder of approximately 20.0% converted into petrochemicals and other products.

Crude oil plays a fundamental role in the industrial development of developing countries. From 2001 to 2005, total world demand for oil grew by approximately 8.0%. For that period, the global demand for crude oil increased from 77.7 million barrels per day in 2001 to 83.8 million barrels per day in 2005, representing a CAGR of approximately 1.9%. Oil demand worldwide has resulted in increasing oil prices. According to EIA, U.S. Crude Oil Imported Acquisition Cost by Refiners increased by approximately 1.2 times from 2001 to 2005. In the same period, as compared with the world, China's demand for oil grew at a much faster rate of 40.8% from 4.9 million barrels per day in 2001 to 6.9 million barrels per day in 2005, representing a CAGR of approximately 8.9%. The following graph shows the total supply of and demand for crude oil in China from 2001 to 2005.

**Total Supply and Demand of Crude Oil of China, 2001-2005**



Source: EIA

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### Demand

Since the early 1980's, China has experienced rapid economic growth which has also generated strong increases in the demand for petroleum resources. Between 2001 and 2005, China's GDP increased by a CAGR of 13.6%, making China one of the fastest growing economies in the world.

Due to this rapid growth, China was the second highest consumer of crude oil in the world in 2005, second to the United States based on the following table. However, China's crude oil consumption on a per capita basis in 2005 remained significantly below that of the worldwide average and the other selected countries (as set out in the table below). The following table sets forth the world's major crude oil consuming countries for the year 2005.

#### Selected Oil Consuming Countries in the world in 2005

Country	Total Oil Consumption <i>(Million Barrels per Day)</i>	Population <i>(Million)</i>	Per Capita Consumption <i>(Barrels per Annum)</i>
United States	20.7	294.9	25.6
China	6.9	1,307.8	1.9
Japan	5.4	127.2	15.4
Germany	2.6	82.5	11.6
Canada	2.3	32.1	25.7
South Korea	2.2	48.4	16.4
Mexico	2.1	105.3	7.2
France	2.0	60.1	12.1
United Kingdom	1.8	59.3	11.1
Italy	1.7	57.5	11.0
Total World Demand	<u>83.8</u>	<u>6,416.6</u>	<u>4.8</u>

Source: EIA, World Bank

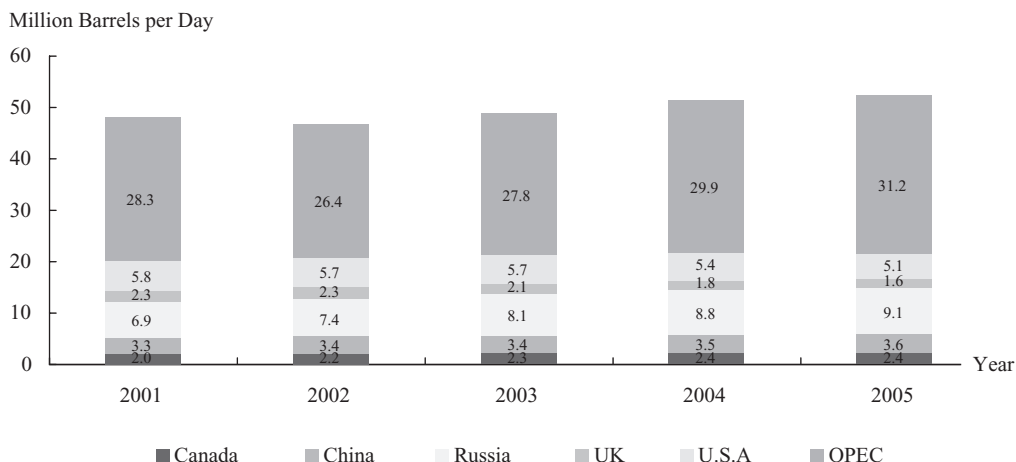
### Supply

The oil industry in China is regulated by the State Energy Administration of China and dominated by the three largest state-owned oil and gas group companies, namely, China National Petroleum Corporation (CNPC), China Petrochemical Group and China National Offshore Oil Corporation (CNOOC). The listed corporations of these three state-owned oil and gas group companies are PetroChina, Sinopec and CNOOC. In 2005, all the three companies together accounted for approximately 93.5% of the total crude oil production in China. All of CNPC (through PetroChina), Sinopec and CNOOC carried out initial public offerings between 2000 and 2002. Consequently, for some of the analysis in this prospectus below, statistics relating to PetroChina, Sinopec and CNOOC are used as key indicators for China's oil producers.

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The following graph sets forth the total crude oil production by various regions in the world from 2001 to 2005. As illustrated, China still plays a relatively minor role in the crude oil production.

**Selected World Crude Oil Producers 2001–2005**



Source: EIA

### Crude Oil Produced

	2001	2002	2003	2004	2005	CAGR
	<i>Million Barrels</i>					
PetroChina	764	770	775	778	823	1.9%
Sinopec	269	270	271	274	279	0.9%
CNOOC	84	109	112	117	130	11.5%
<b>Total</b>	<b>1,116</b>	<b>1,149</b>	<b>1,158</b>	<b>1,169</b>	<b>1,232</b>	<b>2.5%</b>
Year on Year Growth		3.0%	0.8%	0.9%	5.4%	

### Proved Oil Reserves

	2001	2002	2003	2004	2005	CAGR
	<i>Million Barrels</i>					
PetroChina	10,959	10,937	11,495	11,501	11,536	1.3%
Sinopec	3,215	3,320	3,257	3,267	3,294	0.6%
CNOOC	1,246	1,424	1,436	1,456	1,457	4.0%
<b>Total</b>	<b>15,420</b>	<b>15,681</b>	<b>16,188</b>	<b>16,224</b>	<b>16,288</b>	<b>1.4%</b>
Year on Year Growth		1.7%	3.2%	0.2%	0.4%	

Source: Annual Reports of PetroChina, Sinopec and CNOOC

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The table below shows estimates of the conventional oil resource base by global regions through to the year 2025. The oil resource base is defined by three categories: proved reserves (oil that has been discovered but not produced); reserve growth (increases in reserves resulting mainly from technological factors that enhance a field's recovery rate); and undiscovered (oil that remains to be found through exploration). As illustrated, China only accounts for approximately 29.0% of United States's total estimated oil resource, 23.4% of Canada, 4.2% of Middle East.

### Estimated World Oil Resources, 1995–2025

Region	Proved Reserves	Reserve Growth	Undiscovered	Total
	<i>(Billion Barrels)</i>			
<b>Mature Market Economies</b>				
United States	21.9	76.0	83.0	180.9
Canada	178.8	12.5	32.6	223.9
Mexico	14.6	25.6	45.8	86.0
Western Europe	15.8	19.3	34.6	69.7
Japan	0.1	0.1	0.3	0.5
Australia/New Zealand	1.5	2.7	5.9	10.1
<b>Transitional Economies</b>				
Former Soviet Union	77.8	137.7	170.8	386.3
Eastern Europe	1.5	1.5	1.4	4.4
<b>Emerging Economies</b>				
China	18.3	19.6	14.6	52.5
India	5.4	3.8	6.8	16.0
Other Emerging Asia	11.0	14.6	23.9	49.5
Middle East	729.6	252.5	269.2	1,251.3
Africa	100.8	73.5	124.7	299.0
Central and South America	100.6	90.8	125.3	316.7
<b>Total World</b>				
OPEC	1,277.7	730.2	938.9	2,946.8
Non-OPEC	885.2	395.0	400.5	1,681.3
	392.5	334.6	538.4	1,265.5

*Note:* Reserves include crude oil (including concentrates) and liquid petroleum gas.

*Sources:* Proven Reserves as of January 1, 2005: Oil & Gas Journal. Reserve Growth (Total) and Undiscovered: U.S. Geological Survey, World Petroleum Assessment 2000. Estimates of Regional Reserve Growth: EIA and International Energy Outlook 2002.

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### Import and Export

From 2001 to 2005, China's crude oil consumption increased at a CAGR of approximately 8.9% from 4.9 million barrels per day to 6.9 million barrels per day while the world's crude oil production increased at a CAGR of approximately 1.9% from 77.7 million barrels per day to 83.8 million barrels per day over the same period. China has become a net importer of oil every year since 1996 and, in 2004, the net imports of China had reached 2.9 million barrels per day (equivalent to about 44.6% of the total PRC oil consumption per day in that year).

### EXPENDITURE ON EXPLORATION, REFINING AND TRANSMISSION

#### Overview

The sharp increase in global demand for crude oil in recent years has led to a corresponding increase in expenditure on crude oil exploration, refining and transmission.

In China, capital expenditure on oil and gas exploration and production have risen steadily in recent years. As illustrated in the table below, expenditure on exploration equipment by China's three main oil producers, PetroChina, Sinopec and CNOOC, increased from RMB61.8 billion in 2001 to RMB107.2 billion in 2005, reaching a CAGR of 14.8%.

#### Capital Expenditure on Oil & Gas Exploration & Production

	2001	2002	2003	2004	2005	2001-2005 CAGR
	<i>RMB Billion</i>					
Petrochina	41.2	46.1	52.8	62.9	83.2	19.2%
Sinopec	20.3	20.2	20.6	21.2	23.1	3.3%
CNOOC	0.3	0.6	0.5	0.8	0.9	31.6%
<b>Total</b>	<b>61.8</b>	<b>66.9</b>	<b>74.0</b>	<b>84.9</b>	<b>107.2</b>	<b>14.8%</b>
Year on Year Growth	N/A	8.3%	10.6%	14.7%	26.3%	

*Source:* Annual reports of PetroChina, Sinopec and CNOOC

In the same period, capital expenditure on petrochemical refining and transmission also demonstrated steady increases. As indicated in the table below, expenditure on petrochemical refining and transmission by China's big three oil producers, PetroChina, Sinopec and CNOOC, increased from RMB61.9 billion in 2001 to RMB91.4 billion in 2005, reaching a CAGR of 10.2%.

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### Capital Expenditure on Petrochemical Refining & Transmission

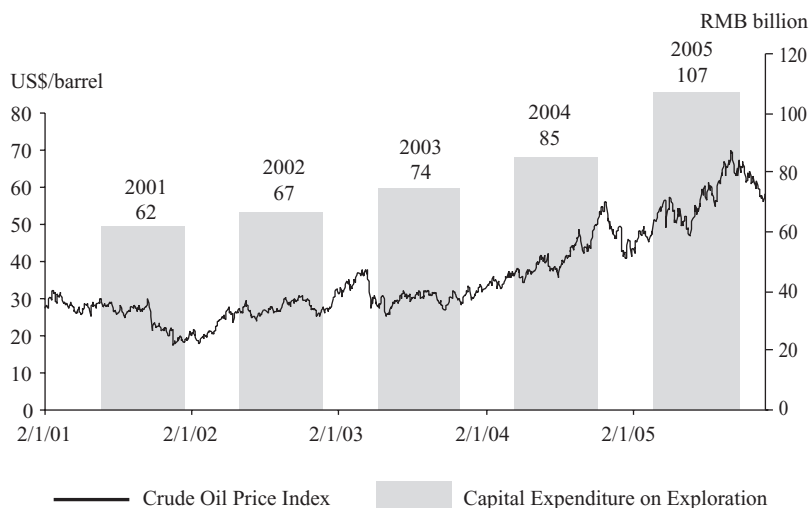
	2001	2002	2003	2004	2005	2001-2005 CAGR
	<i>RMB Billion</i>					
Petrochina	19.7	27.5	30.1	35.9	41.2	20.3%
Sinopec	38.2	20.8	23.9	42.0	34.5	-2.5%
CNOOC	4.0	6.2	7.7	12.1	15.7	40.8%
<b>Total</b>	<b>61.9</b>	<b>54.6</b>	<b>61.7</b>	<b>89.9</b>	<b>91.4</b>	<b>10.2%</b>
Year on Year Growth	N/A	-11.8%	13.0%	45.7%	1.7%	

*Source:* Annual reports of PetroChina, Sinopec, CNOOC

### Relationship between Oil Price and Capital Expenditure of Oil Exploration and Petrochemical Refining & Transmission

An oil or gas well is sometimes not developed for commercial production due to concerns relating to exploration costs. It will only be put into production if the estimated oil or gas commercial reserves can cover the estimated costs of production and other ongoing production costs. Consequently, any increased demand for oil which leads to steady increase in oil prices would result in an increase in the number of oil exploration projects which were originally not economical to be put into production. Therefore, continuous growth in the price of crude oil would result in substantial increase in investments on petroleum exploration and petrochemical refining & transmission.

#### The relationship between West Texas Crude Oil Price Index and the exploration capital expenditure of major oil and gas producers\* in the PRC

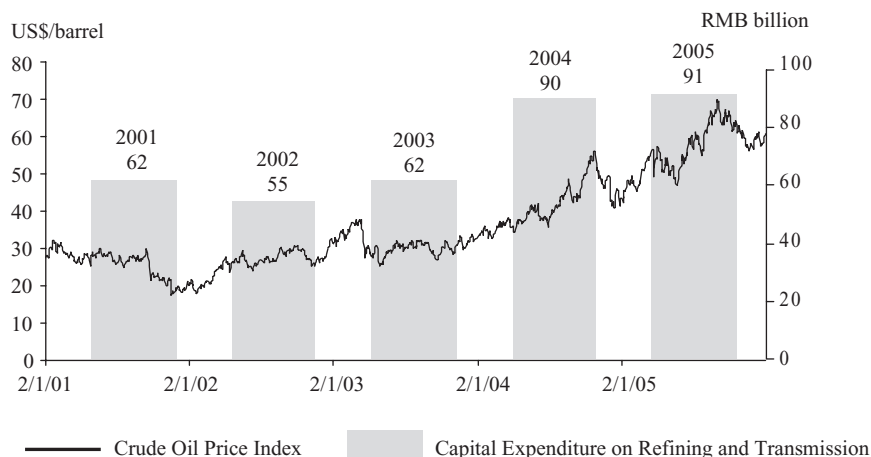


*Sources:* Bloomberg and annual reports of PetroChina, Sinopec and CNOOC

\* Major oil and gas producers in the PRC refer to PetroChina, Sinopec and CNOOC

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### The relationship between West Texas Crude Oil Price Index and the petrochemical refining and transmission capital expenditure of major oil and gas producers\* in the PRC



Sources: Bloomberg and annual reports of PetroChina, Sinopec and CNOOC

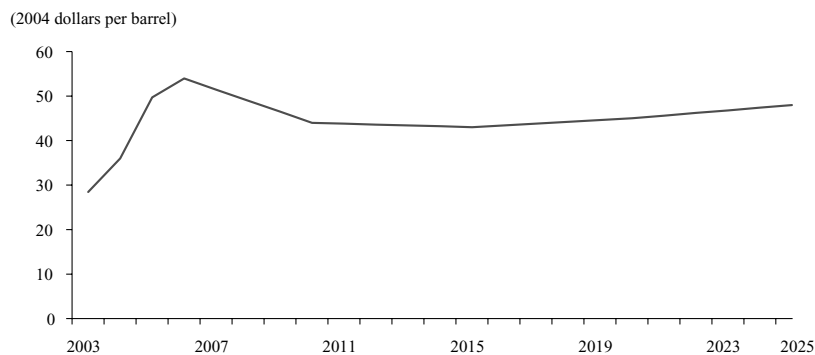
\* Major oil and gas producers in the PRC refer to PetroChina, Sinopec and CNOOC

### Future Perspective

According to the EIA projections, in the near term, world oil price will still show a rising trend. Consequently, due to the positive correlation between oil price and exploration equipment expenditure, it is expected that the expenditure on exploration equipment will increase.

The following graph from EIA estimates that petroleum product price is still expected to exceed US\$40 per barrel in 2025. Please note that petroleum product price is defined as weighted average price delivered to U.S. refiners.

### Petroleum Product Prices\*



\* Data for 2003 and 2004 are model results and may differ slightly from official EIA data reports.

Sources: EIA, "Annual Energy Outlook 2006 with Projections to 2030"

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### OIL WELL PIPE INDUSTRY IN CHINA

#### Overview

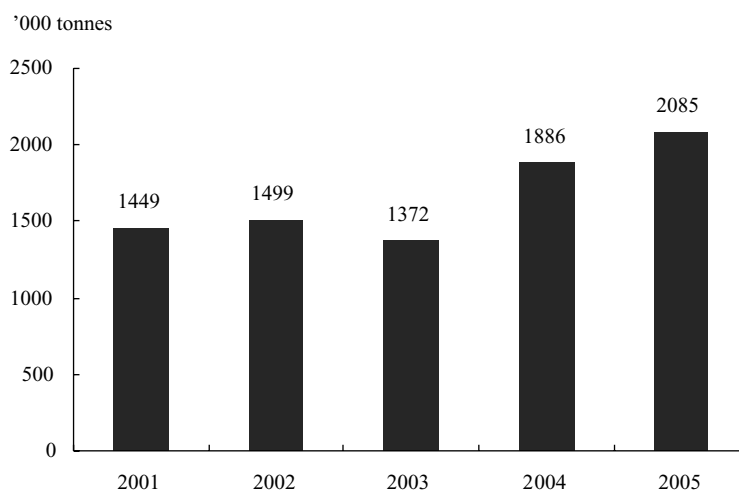
Oil well pipes (mainly oil transfer pipes and casing pipes etc.) are a type of seamless pipe and one of the major production equipment used in oil and natural gas exploration activities. In order to maximise and ensure a steady output from oilfields during the course of exploration for petroleum, it is necessary to drill new production wells continuously in one oil field. The materials that are used most in the exploration of new oil wells are mainly oil well pipes and non-metal materials for well cementing where, once used, cannot be reused for another well. Consequently, for each new oil well, whilst the drilling platform and pumping unit may not be new, the oil well pipes are invariably new.

In China, the oil well pipe industry can be seen as a relatively emerging sub-sector in the iron and steel industry in China, which is attributable to its importance in the value chain of the oil industry.

#### Demand

The major factors that result in the strong demand for oil well pipes are the overall increases in global petroleum consumption and global petroleum prices staying relatively high, both of which lead to increases in exploration for and exploitation of more oil wells by petroleum companies. There have been approximately 60,000 to 90,000 oil and gas wells completed in the world every year between 2001 and 2005. For every meter in depth of an oil well, the drilling and related activities consumes approximately 60 kg of oil well pipes. During this period, the apparent consumption of oil well pipes in China reached a low of 1,372,000 tonnes in 2003 and a high of 2,085,000 tonnes in 2005, representing an increase of approximately 52.0%. Set out below is a graph consumption of oil well pipes in China during the period of 2001 to 2005.

**Consumption of oil well pipes in the PRC  
between 2001 and 2005**



Sources: Statistics figures from China Iron and Steel Association



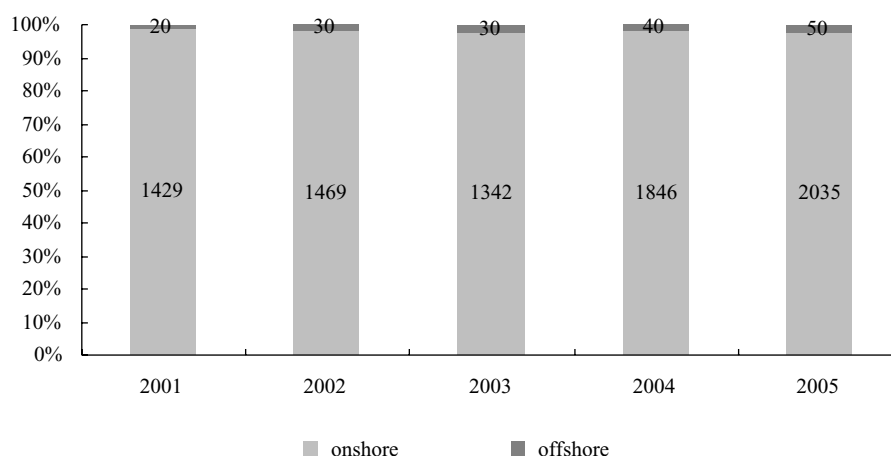
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From a geological perspective, oil wells in the oil fields of east China are relatively shallower, generally at about 1,000 to 2,000 metres whilst those in west China are relatively deeper, with an average depth of 4,000 metres. This suggests that more oil well pipes will be consumed by petroleum and exploration companies in the western part of China. As for offshore and onshore oil exploration, the demand for oil well pipes, in tonnes, required for onshore oil exploration exceeds that required in offshore oil exploration. Set out below is a graph comparing the consumption of oil well pipes between onshore and offshore oil explorations in China.

**Consumption of oil well pipes between onshore and offshore oil exploration  
of major oil and gas producers in the PRC  
between 2001 and 2005 ('000 tonnes)**



*Sources:* China Metallurgical Industrial Planning and Research Institute

*Note 1:* Major oil and gas producers in the PRC refer to PetroChina, Sinopec and CNOOC

*Note 2:* China Metallurgical Industrial Planning and Research Institute was founded in 1972 upon approval by the State Council. It is a grade A research house (being the highest grade in the PRC) and it was engaged by the Company to survey industry information on the domestic and overseas steel pipe industry. The data used and attributed to sources in the report are based on published information of, amongst others, the China Iron and Steel Association, PetroChina and Sinopec. The engagement fee for such report was RMB40,000.

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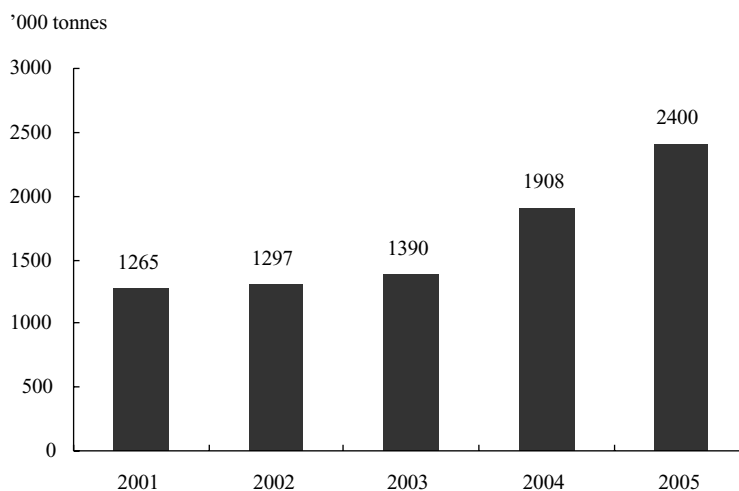
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### Supply

In the oil well pipes industry, apart from a small amount of high end and sophisticated products that are still imported, the Chinese manufacturers are able to manufacture most of the products to customers' specifications. The output of oil well pipes in China increased from 1,265,000 tonnes in 2001 to 2,400,000 tonnes in 2005, representing a CAGR of approximately 17.4%. Set out below is a graph on the change in output of oil well pipes in China during recent years:

**Output of oil well pipes in the PRC between 2001 and 2005**



Sources: China Iron and Steel Association

### Import & Export

As the geological conditions of Western China are more complicated and offshore explorations are relatively difficult, it is necessary to use high grade oil well pipes. Certain types of these oil well pipes are still not produced or not bulk produced in China. Oil well pipes imported into China comprise mainly such types of oil well pipes, and are mainly imported from Japan, Germany and the Russian Federation etc.. Oil well pipes exported by China to the global market are mainly mid-end products.

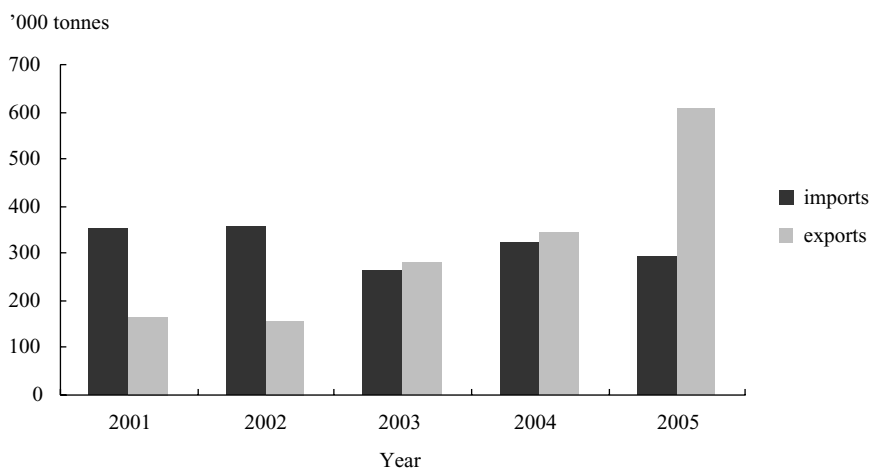
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As shown in the graph below, since 2003, the PRC has become a net exporter of oil well pipes. In 2005, imports and exports of oil well pipes were 292,000 tonnes and 606,000 tonnes respectively.

### Imports and Exports of oil well pipes in the PRC between 2001 and 2005



Sources: China Iron and Steel Association

### Market Players

The oil well pipes production industry is relatively concentrated. Certain state-owned enterprises command very substantial shares in the market. In 2005, the top ten Chinese oil well pipe producers represented approximately 99.6% of the total market share in the oil well pipes industry in China, with Tianjin Pipe (Group) Corporation (TPCO) and Baosteel Group accounting for 41.9% and 20.8% respectively. The remaining 0.4% of the total market share was represented by more than ten other enterprises in the industry. Set out below is a table showing the top ten Chinese oil well pipes producers in China for 2005.

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### The Top Ten Oil Well Pipe Producers in China for 2005

Ranking	Name of company	Output ( '000 tonnes)	Market share in terms of output
1	Tianjin Pipe (Group) Corporation (TPCO) (天津鋼管集團有限公司)	1,006	41.9%
2	Baosteel Group (寶鋼集團)	500	20.8%
3	Hunan VALIN Steel Tube & Wire Co., Ltd. (衡陽鋼管公司)	238	9.9%
4	Anshan Iron and Steel (鞍鋼)	193	8.0%
5	Baogang Group (包鋼)	110	4.6%
6	Pangang Group Chengdu Iron & Steel Co., Ltd. (成都無縫)	95	4.0%
7	<b>The Company</b> (安徽天大石油管材股份有限公司)	<b>90</b>	<b>3.8%</b>
8	Jiangsu Chengde (江蘇誠德)	60	2.5%
9	Tianjin Seamless Pipe Factory (天津市無縫鋼管廠)	54	2.3%
10	Jiangsu Xigang Group, Ltd. (無錫鋼廠)	44	1.8%
	Top Ten sub-total	2,390	99.6%
	Total for China	<u>2,400</u>	<u>100.0%</u>

*Sources:* China Iron and Steel Association

*Note:* The Company's actual production is 4,063.1 tonnes more than that quoted in the table above. This represents a variance of about 4.5%. This is consistent with the Company's practice of responding to general surveys by rounding off production numbers to 10,000.

### Future prospects

The future prospects of oil well pipe producers in China will be underpinned by:-

- increased oil exploration in China
- limited impact of increases in costs of main raw materials

#### *Increased oil exploration in China*

More oil exploration industry will require more oil well pipes. In terms of drilling depth for petroleum exploration in China, the drilling depth is normally 1,500 meters, and oil well depths are generally about 1,000 meters to 4,000 meters. If the world oil prices remain at its current level or higher, oil producers would be prepared to drill deeper to pump out of oil as such oil wells would, in view of relatively higher oil prices, still remain commercially viable. As a result, the Directors believe that the oil exploration industry in China will continue to flourish and consume more oil well pipes in the near term.

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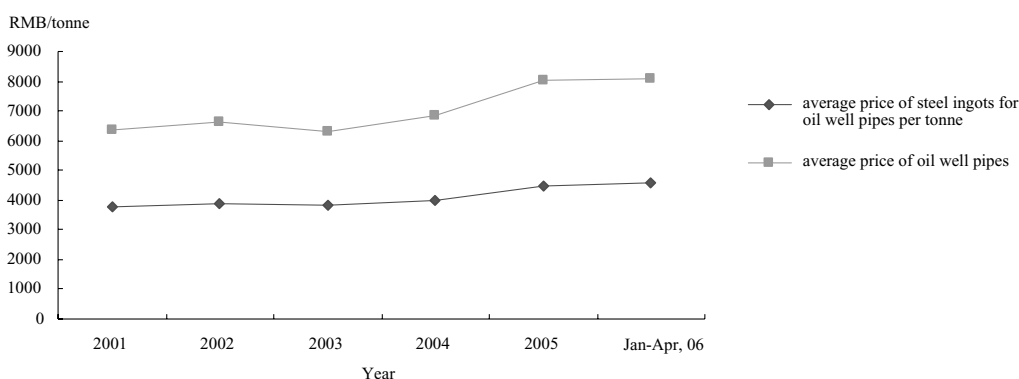
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### *Limited impact of increases in the cost of major raw materials*

An important raw material for oil well pipes is steel billet. As illustrated below, the price of steel increased from 3,750 RMB/tonne in 2001 to 4,500 RMB/tonne in 2005, representing an increase of 20%. However in the same periods oil well pipes demonstrated an increase of 26.1%. For so long as there is strong demand for oil well pipes in China, any increase in the main raw material is expected to have a limited impact on the margins of oil well pipe producers as the trend indicates that the oil well pipe producers are able to pass on cost increases to their consumers.

### **The Relationship Between Raw Material Price and Product Average Selling Price in the PRC**



Sources: China Iron and Steel Association

## **POLICIES AND RELEVANT REGULATIONS IN CHINA**

Set out below are some of the more important policies and regulations for the oil well pipe processing industry as formulated by the PRC Government and Anhui Province. The Directors believe that such policies and regulations will also support the growth prospects of oil well pipe producers such as the Company :

- *“Notice of the Office of State Council Concerning the Finalization of Relevant Policy Measures For Facilitating the Emergence of Central China by the State Council of the Central Government of the PRC” (Guo Ban Han [2006] No. 38)*

This notice provides that the restructuring of the iron and steel, petrochemicals, chemical fertilizers, non-ferrous metal and construction materials industry will be given additional governmental support in the central region including the Anhui province, so as to form a solid base for the supply of such high quality materials. The State will grant necessary support by forming favorable policies to the combining and restructuring of major enterprises in the central region. The State will offer greater support for improvement in technology used by central region enterprises’ development for technologies research, sourcing for engineering equipment and setting favorable taxation policies. Furthermore, the State supports the research and development of major machineries’ technology and the development of other major industries’ technology in the central region.

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- *“Industry Structure Adjustment Directive Catalog (2005)”, Order No. 40 of the National Development and Reform Commission*

This policy provides that the manufacturing of oil well pipe for oil exploration, high pressure boiler pipes for power stations and petrochemical pipes for long distance transfers are manufacturing industries encouraged by the PRC government.

- *“Policies for the Development of Iron and Steel Industry (Full Text)” (Document No. 35) issued by the National Development and Reform Commission of the PRC on 8 July 2005*

This policy provides that the State will speed up the nurturing of iron and steel industry’s ability to innovate. Efforts will be devoted to support the establishment of institutions for research and development of products and technologies. Domestically developed techniques, equipment technologies and products with intellectual property rights will be promoted. The application and use of equipment made in China in the iron and steel industry will be supported and organized. Standards on the research, design and manufacturing of major technological equipment for the iron and steel industries in the PRC will be improved. This policy also encourages iron and steel enterprises to produce extremely durable and corrosion-resistant steel so as to enhance the strength and extend the life of steel with the ultimate aim of reducing the volume of steel usage. Specifically, this policy encourages the commercial use of H<sub>2</sub>S and CO<sub>2</sub> resistant as well as open air corrosion-resistant and fire-resistant products such as oil well pipes, steel pipes and plates.

- *“Notice of Anhui Province’s Mission to Formulate a Strategic Objectives, Procedures and Progress Regarding the Establishment of a Middle-Class Society” (Wan Fa [2003] Document No. 12)*

This notice refers to an action plan named “861 Action Plan” as formulated by the government of Anhui Province to establish eight major production bases and the construction of six major and fundamental projects.

The “861 Action Plan” is a plan focused on continuing construction of existing projects, commencement of new projects, preparation for the commencement of new projects and preliminary activities. In terms of implementation of these projects, the PRC government of Anhui province will proceed according to the principles of dynamic management and execute them gradually by phases throughout the years. Projects under the “861 Action Plan” are important and fundamental for the establishment of the eight major production bases and six major fundamental projects. Among them, investment in manufacturing projects and energy projects amounted to more than RMB500 million. Investment value for several of the projects even exceeds RMB10 billion. The plan covers areas such as transportation, energy, manufacturing, raw material, chemicals, water, production, processing and supply of agricultural by-products, environmental protection, high technology and community affairs. There are now about 600 projects under the “861 Action Plan” representing total a investment of at least RMB1,000 billion. In May 2006, the Company was notified that their proposal for a phase II high value added oil well pipes and petrochemical pipes expansion project had been included in the Anhui Province 861 Action Plan.