

# **"Coke & Coking Coal Markets Worldwide & Influence of CIS Countries"**

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## **Initial Comments**

In this presentation, we will discuss the world market situations for coke and coking coal, consumed mainly by the iron and steel industries.

These markets are related to some extent, yet have differing characteristics in terms of supply and pricing e.g. coke = monthly pricing fob China, coking coal = annual pricing fob Australia.

The last few years have seen record prices for all metal and energy commodities, the main factors being:

- Growth of demand in China – a voracious consumer of all commodities, and likely to remain so;
- Lack of new investment in supply in the 1990s, port and shipping bottlenecks;
- Concentration of commodity suppliers on a corporate level, leading to an inevitable relaxation in the intensity of market competition;
- Lastly, the entry of "virtual" internet -based markets for coal and other commodities. Often, these markets seem to be divorced from the actual physical market situation. Investment funds like commodity markets as they supply (liquid) exposure to the Chinese economy...

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# Presentation Outline

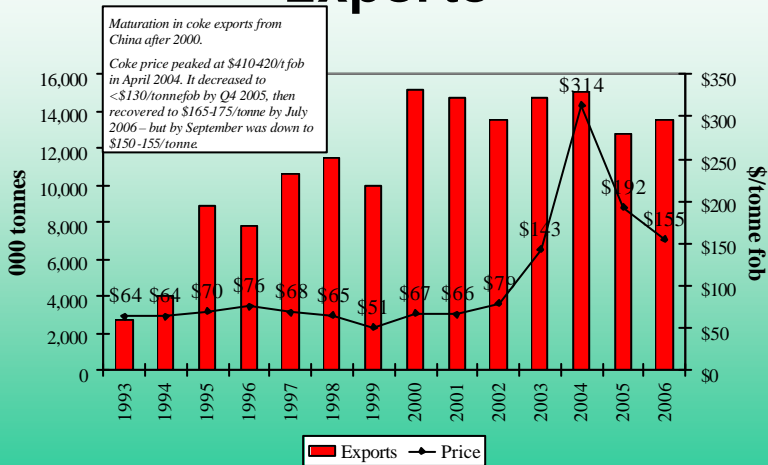
1. *Metallurgical Coke*
2. *Coking Coal*
3. *World Iron Output*
4. *Summary & Conclusions*

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# Metallurgical Coke

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# Chinese Coke Price vs Exports



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# Chinese Coke Prices 2004-2006

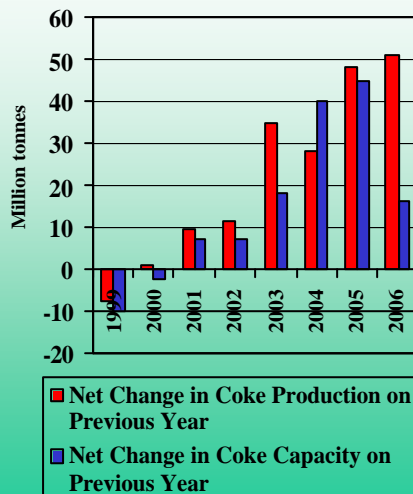
Coke Price, US\$/tonne fob	2004	2005	H1 2006	Sept 06
<b>China</b>	<b>Average</b>	<b>Average</b>	<b>Average</b>	
Metallurgical - 12/12.5% Ash, 30/90mm	\$314	\$192	\$138-144	\$150-155
Export Licence (EL) Cost (included in export price)	\$120	\$40	\$4-6	\$5-6
Coke Price without EL Cost	\$193	\$152	\$136	\$147
EL As % of Export Price	38%	21%	4%	2%
Metallurgical - 10.5% Ash, 30/90mm	\$335	\$213	\$154-164	\$170-175
Nut Coke – 12/12.5% Ash, 10/25mm (for ferroalloys etc)	-	-	\$113-119	\$125-130
Foundry 10% Ash, 80/220mm		\$247	\$187-197	\$195-200

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# Factors in the Coke Market

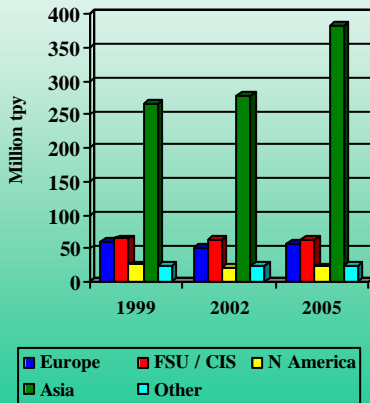
Factor	Current Influence	2004	2005	2006
Net Change in Chinese Coke Capacity (tonnes per year)	Share of beehives has decreased from 52% in 1995 to 11% in 2005. Slowdown in new capacity in 2006.	+40m	+45m	+16m
Chinese Export Licence Cost (\$/tonne, annual average)	Shortages seen in 2004 have since eased due to lower demand for Chinese coke	\$120	\$40	<\$10
Hard Coking Coal Prices (\$/tonne fob Australia)	Increasing reliance on Australia for hard coking supplies	\$55-57.50 (+22%)	\$125 (+120%)	\$110-115 (-10%)
World Blast Furnace Iron Production (tonnes)	If China is discounted, there would have been a 12m tonne decrease in world iron output in 2005	719m (+8.9%)	784m (+9.0%)	850-860m (+8-10%)
World Coke Capacity (tonnes per year)	Closures in Europe and N America halted, slowdown in new capacity in 2006.	506m (+45m)	553m (+48m)	575m (+21m)
Coke Price Average, 12/12.5% Ash (\$/tonne fob China)	Chinese coke stocks declined until May then increased, coke price low vs coal price, demand still healthy	\$314	\$193	\$130-170

## Chinese Coal & Coke Production



- From 2001, the Chinese government tried to enforce the closure of unsafe coal and polluting coke capacity, a process still ongoing. However, coke capacity and production in China have continued to grow year-on-year, as the chart shows.
- Modern, larger scale capacity has replaced old units and beehive ovens.
- In 2006, growth in coke capacity has slowed and seems likely to be lower than the increase in production.
- The Chinese coke industry is currently experiencing poor profitability due to high coking coal prices and the financing costs of building new capacity.

# Development of World Coke Capacity



- Long-term decline in coke capacity in Europe, North America and other developed regions stopped from 2002.
- From 2002 to 2005, coke capacity in Europe increased by 4.1m tpy.
- Sun Coke added non-recovery plants at Haverhill, USA in 2005 (0.50m tpy) and Serra, Brazil in 2006 (1.65m tpy).
- Other battery expansions include one in Egypt in 2005, three in Russia in 2006-7, two in Japan in 2006, one in South Africa in 2006, and one in Korea in 2007.
- Increasing importance of Asia clearly evident, with the main growth in China and India.
- Numerous coke projects in India aimed at self sufficiency, but start-up and operational status of many is uncertain.

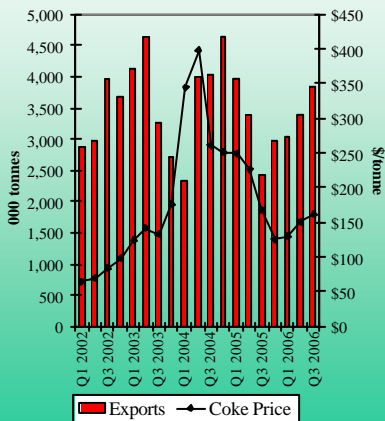
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# Chinese Coke Exports

000 tonnes	2002	2003	2004	2005	Average % Ann Change, 1998-2005
Europe (Germany, Italy, France, UK, Sweden, other)	4,653	4,667	4,886	3,880	1.0%
North America (USA, Canada, Mexico)	1,367	1,105	2,029	1,679	1.2%
Latin America (Brazil, other)	1,902	2,218	1,855	1,615	8.3%
India	1,111	1,181	970	1,133	-6.2%
Japan	2,296	2,915	3,411	2,811	12.7%
Other Asia (Korea, Chinese Taipei, Thailand, Viet Nam)	945	1,142	752	621	1.1%
Middle East (Iran, Turkey)	643	512	337	419	7.1%
Other (Australia, S Africa, Kazakhstan)	673	989	688	607	2.7%
<b>Total</b>	<b>13,592</b>	<b>14,729</b>	<b>14,928</b>	<b>12,765</b>	<b>2.8%</b>

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## Chinese Coke Price vs Exports by Quarter

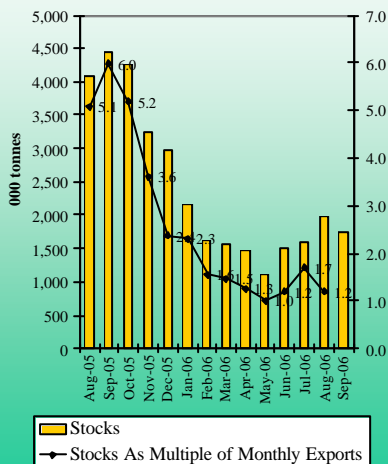


Several market phases from 2002 to date:

- **2002-H1 2003:** rising supply of coke; slow rise in coke prices due to constraints within China (coal availability, transport etc).
- **H2 2003-H1 2004:** exports decreased from 4.6m tonnes in Q2 2003 to 2.3m tonnes in Q1 2004 due to strong Chinese demand; export licence shortages; as a result, coke prices spike in Q2 2004.
- **H2 2004-H2 2005:** coke over-supply, export licence shortage ends, prices decline rapidly, rebound in exports in Q4 2005, continuing into 2006.
- **H1 2006:** prices rising at a slow rate; demand improving; low coke stocks in Chinese ports; prices at sub-economic levels given high coking coal prices.

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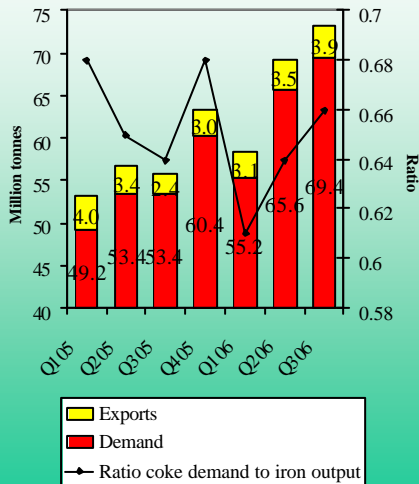
## Chinese Coke Port Stocks



- Chinese port stocks of coke declined from 4.45m tonnes in September 2005 to 1.1m tonnes at the end of May 2006.
- As a multiple of monthly coke exports, this was equivalent to a decline from six months to just one month at the end of May 2006.
- From May to August, coke stocks rose to almost 2m tonnes; but declined in September.

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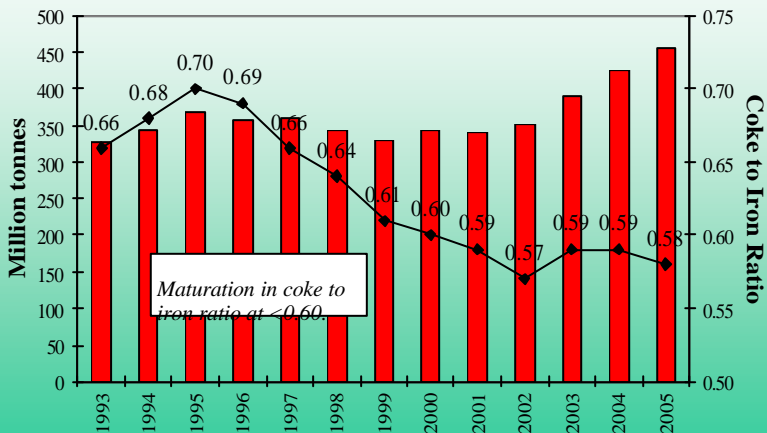
# Chinese Coke Demand & Exports



- This chart shows Chinese coke demand (apparent basis = output minus exports) and exports, plus ratio of coke demand to iron production.
- It demonstrates the growing importance of the domestic market to the Chinese coke industry over 2005, and the lower exports (5% of production in 2006 compared to 7% in Q1 2005).
- The decline in the coke demand to iron output ratio from Q1 2005 to Q1 2006 indicates coke stock reductions.
- In Q2 and Q3 2006, there was an increase in coke demand to iron output ratio, indicating stock increases. The Chinese are trying to cut stocks at the port in order to get prices higher.

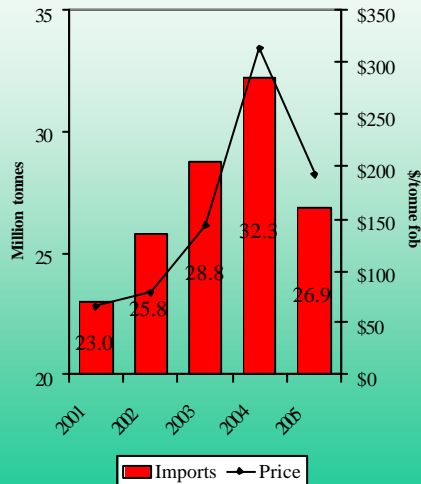
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# World Coke Output versus Ratio to Iron Output



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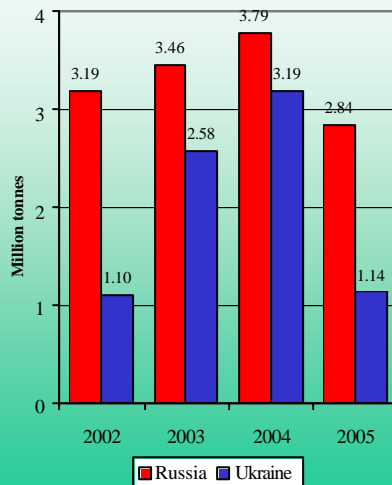
## World Coke Imports vs Price



- This chart shows the combined coke imports of all the countries of the world from 2001 to 2005.
- It shows rising imports from 23.0m tonnes in 2001 to 32.2m tonnes in 2004, then a decrease to 26.9m tonnes in 2005.
- The decrease was due to de-stocking by the steel industry, plus capacity start-ups.
- As a result, the coke price decreased from 2004 to 2005.

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## CIS Coke Exports



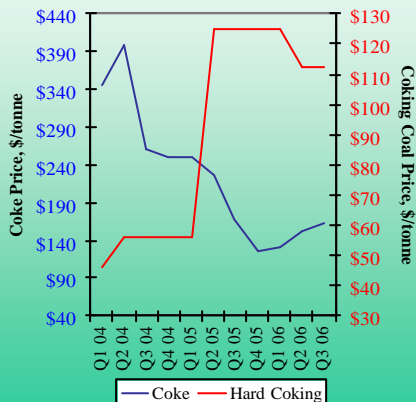
- Coke exports of Russia and Ukraine from 2002 to 2005 are shown. There was a major decrease in 2005, especially from Ukraine.
- Exports from Ukraine have historically been focused on Turkey and eastern European countries such as Bulgaria, Romania and Serbia.
- Russian exports have gone to other CIS countries such as Kazakhstan and Ukraine, as well as India and Iran. In H1 2006 they were down by 58% on 2005.
- Coke capacity expansions at Altay-Koks (1.1m tpy in 2006), Kemerovo (0.8m tpy, 2007), Mechel (0.5m tpy, 2006) and Severstal (0.5m tpy, 2005).

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# Coking Coal

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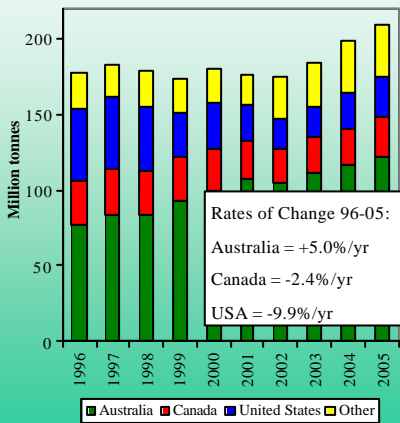
## Coke versus Coal Pricing – By Quarter from 2004



- Chart shows that coke and hard coking coal prices have moved in opposite directions since 2004: coke decreased from \$400/tonne in Q2 2004 to \$130/tonne in Q1 2006; whereas coking coal went from \$55-57.50/tonne in 2004 FY to \$125/tonne in 2005.
- The decrease in the 2006 coking coal price of just \$10/tonne leaves merchant cokeries in loss-making situation.
- In theory, it should be cheaper for steelmakers to import coke than to produce it themselves...

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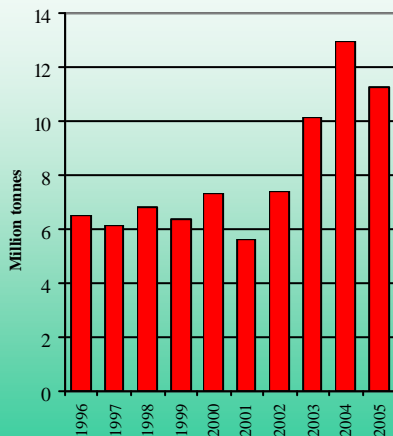
# Coking Coal Exports



- The growing domination of the world coking coal trade by Australia is clearly shown. Its exports were 122m tonnes in 2005, 5% more than in 2004.
- Exports from Canada and the US are in long-term decline, though both had higher sales in 2005 compared to 2004 – 26.6m tonnes and 26.0m tonnes respectively.
- Supplies of coking coal are growing from Mongolia (2.2m tonnes in 2005), New Zealand (1.7m tonnes) and Russia (see next slide).

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# Russian Coking Coal Exports



- Exports of coking coal have grown from <7m tonnes before 2000 to almost 13m tonnes in 2004. In 2005, they were lower at 11.3m tonnes, accounting for 6% of total world exports.
- Exports in H1 2006 were 24% down on same period of 2005.
- The main coking coal producing region of Russia is Kuzbass, located in the southern part of western Siberia. The main markets for Russian coking coal are Ukraine, Japan and eastern European countries.
- The largest coking coal project under development in Russia is Elga, to be developed from 2007-2008. The first phase of the project will result in a capacity for metallurgical coal of 7-8m tpy.

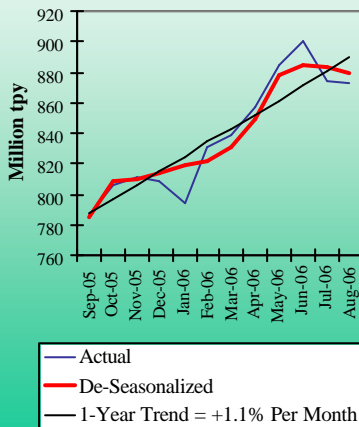
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# World Iron Output

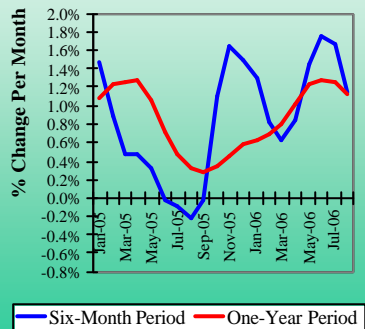
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## Global Annualized Pig Iron Output Data

World Iron Output - Actual & Seasonally Adjusted



Progression of Historical Rates of Increase of De-seasonalized Iron Output



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## Pig Iron Output – Rates of Change of De-seasonalized Data to August 2006

<i>Million tpy</i>	<i>Iron Output, Annualized &amp; De-seasonalized Basis</i>		<i>% Change Per Month – Previous Six Months</i>	<i>% Change Per Month – One Year</i>
	<i>August 2005</i>	<i>August 2006</i>		
Europe	108.1	118.7	+0.8%	+0.7%
Americas	83.3	90.7	+1.2%	+0.5%
Asia & Middle East	483.2	579.0	+1.2%	+1.5%
Africa	6.6	6.3	-1.8%	0.0%
Australia	6.8	7.2	+2.0%	-0.1%
CIS (Fmr Soviet Union)	78.4	87.5	+1.8%	-0.2%
<b>Global</b>	<b>764.5</b>	<b>879.3</b>	<b>+1.2%</b>	<b>+1.1%</b>

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## Summary & Conclusions (1)

**Chinese prices have become the main benchmark indicator for the coke market.** Chinese coke prices averaged \$314/tonne in 2004, against averages of \$143/tonne in 2003 and a pre-2003 average of \$60-80/tonne. The main grade is 12/12.5% ash, 30/90 mm size.

- The 2005 average was \$192/tonne, 39% lower than 2004. From a low of <\$130/tonne fob in Q4 2005, prices increased to \$165-175/tonne fob by the middle of 2006. By September they had declined to \$150-155/tonne fob.
- Annual Chinese coke exports capped at 14m tonnes by the government in 2005 and 2006, and the long-term policy is reduce the exports so as discourage over-production and so control pollution. Current limit likely to remain for 2007.

A combination of factors was responsible for the 2004-2005 coke price escalation:

- Chinese environmental policy for coke and coal; export licence shortages; coking coal shortages; a booming steel market; coke capacity closures in Europe and the US.
- In 2006, these market factors have diminished but have not disappeared – therefore coke prices increased by \$45-50/tonne in the first half of 2006. Although export licence cost is no longer an issue, coking coal prices are still high and iron production is at record levels.

Chinese port stocks of coke declined from 4.45m tonnes in September 2005 to 1.11m tonnes in May 2006, equivalent to a decline from almost six months of exports to less than one month. From May to August, port stocks increased to almost 2m tonnes; but declined in September.

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## Summary & Conclusions (2)

Hard coking coal prices decreased by just 10% in 2006 following the 120% rise in 2005. Coal prices are exceptionally high compared to merchant coke prices, so that in theory it should be cheaper for steelmakers to import coke from China or other sources than to produce coke captively. There seems likely to be a further reduction in coking coal prices in 2007.

Australia has assumed a dominant position in the hard coking market. Its coking coal exports have increased by an average of 5.0% per year, whereas exports from Canada have decreased by 2.4% per year and from the USA by 9.9% per year.

After growth in output slowed in the second half of 2005, world iron output increased in real terms in the first half of 2006. Most of the growth was centred in Asia, especially China.

- Our analysis of data indicates that world iron output was at the highest level ever in real terms in June 2006, but lower in July and August.

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**End of Presentation.  
Thank You!**

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