



# Coal Supply-Demand and Price Trend

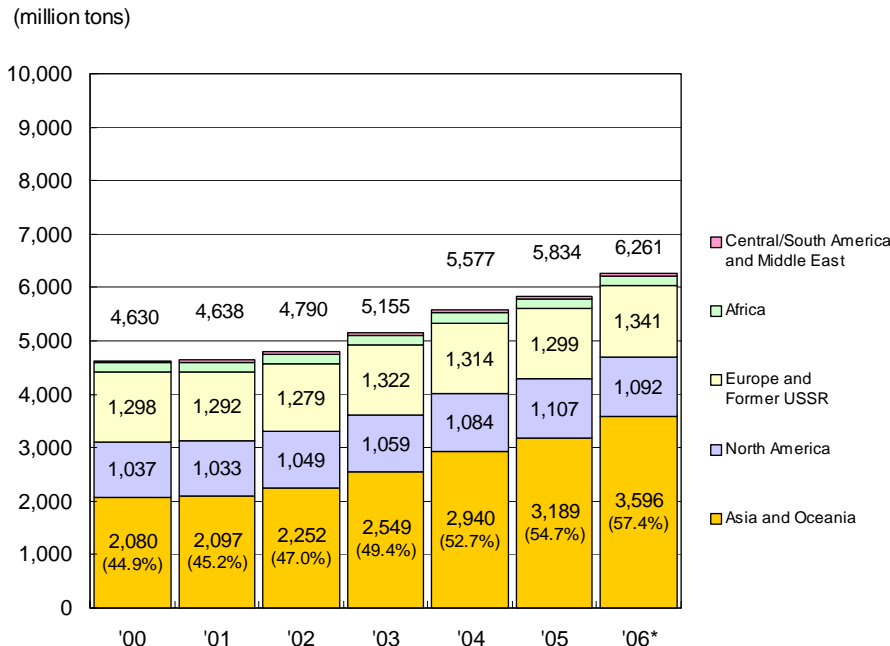
February 4 (Monday), 2008

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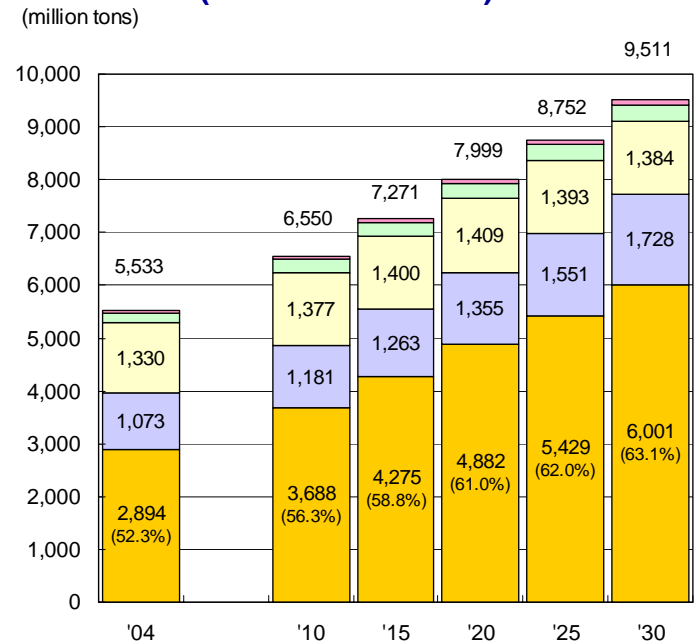
# Global Consumption of Coal

- ◆ Coal demand has increased since 2002, particularly in Asia. Global coal consumption in 2006 was 6.26 billion tons (5.34 billion tons excluding brown coal).
- ◆ Up to 2030, coal consumption is expected to grow at the annual rate of 2.1%, driven by the growth of demand especially in Asia and the increasing demand for coal in the power generation sector.
- ◆ The largest growth in coal consumption is expected in China and India, followed by South Korea, Taiwan and other Southeast Asian countries.

**Trend of coal consumption by area**



**Outlook for coal consumption by area (in reference case)**



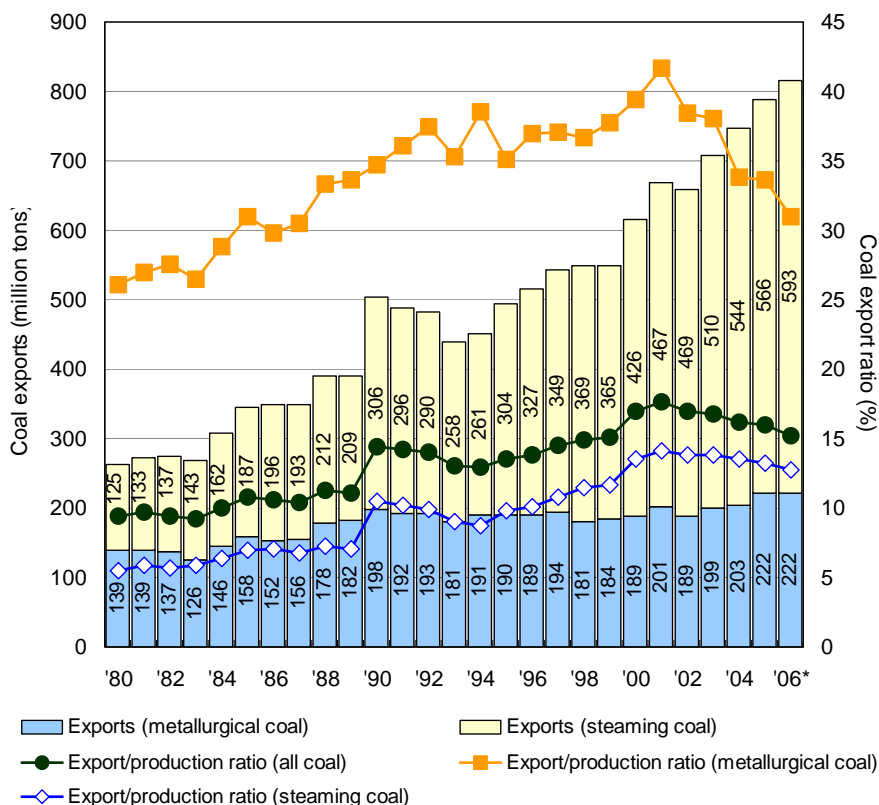
Note: Figures for 2006 are estimated.  
Source: IEA, "Coal Information 2007"

Source: EIA, "International Energy Outlook 2007"

# Global Trading of Coal

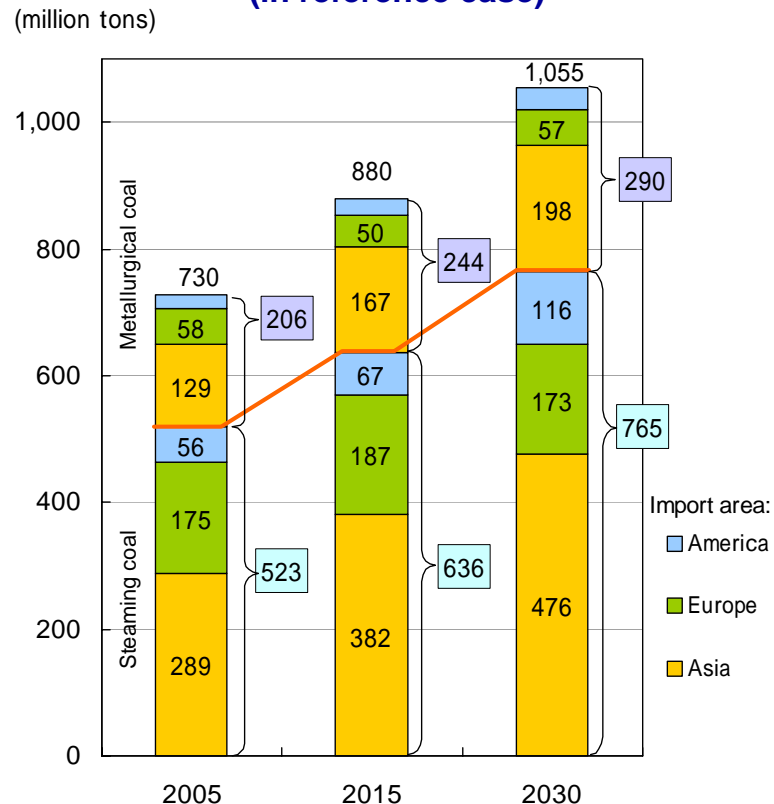
- ◆ Trade volume has been increasing as demand has grown.
- ◆ Trade volume is expected to grow further, particularly in Asia.

Trend of export volume and export ratio



Note: Figures for 2006 are estimated.  
Source: IEA "Coal Information 2007"

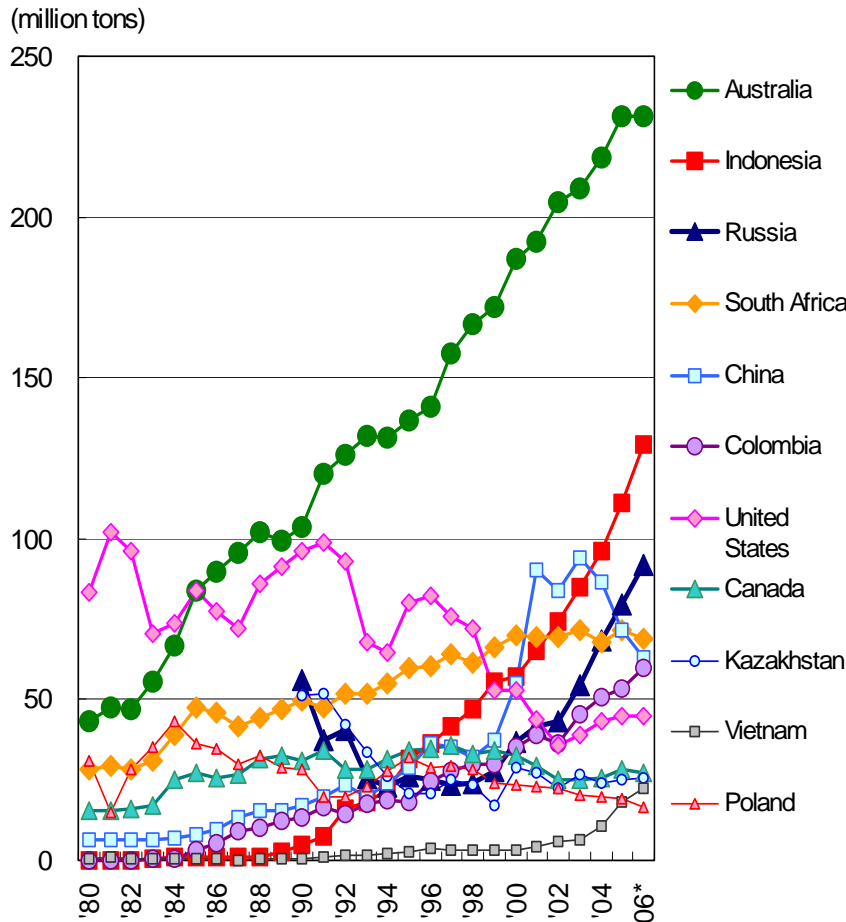
Outlook for coal trade (in reference case)



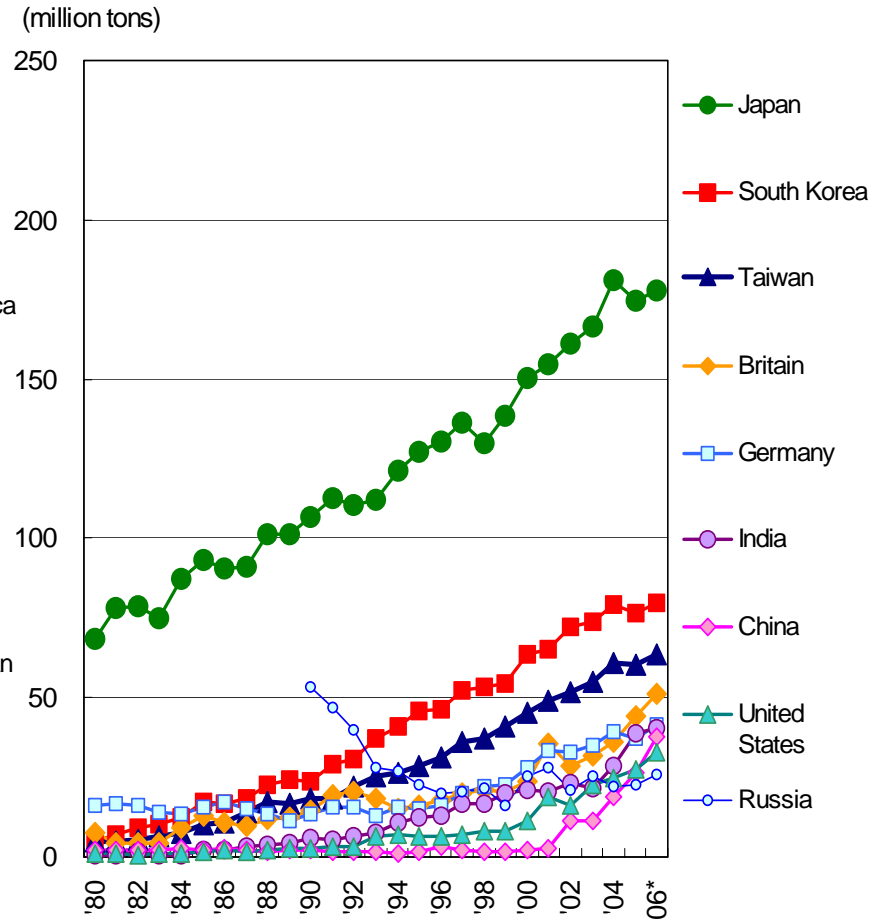
Source: EIA "International Energy Outlook 2007"

# Major Coal Exporters and Importers of the World

Trend of export volume by country



Trend of import volume by country



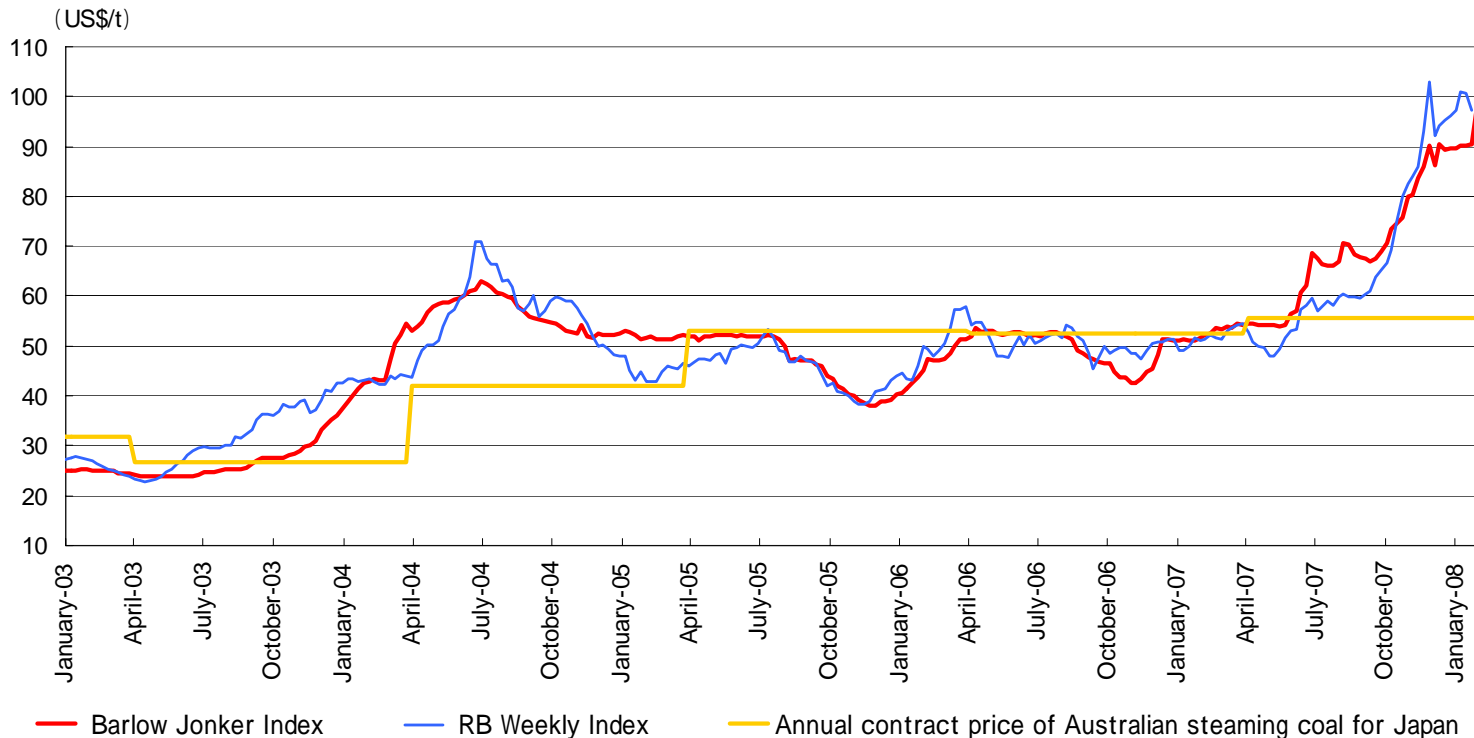
Note: Figures for 2006 are estimated.

Source: IEA "Coal Information 2007"

# Trend of Steaming Coal Prices

## (Australian and South African Coal Prices)

- ◆ Prices have been rising since June 2003 and reached historical highs in July 2004.
- ◆ Subsequently, prices fell as supply capacity was expanded to meet the demand particularly in Australia and Indonesia, and fluctuated in the 40-50 dollar/ton range.
- ◆ However, prices began to rise again sharply from June 2007.



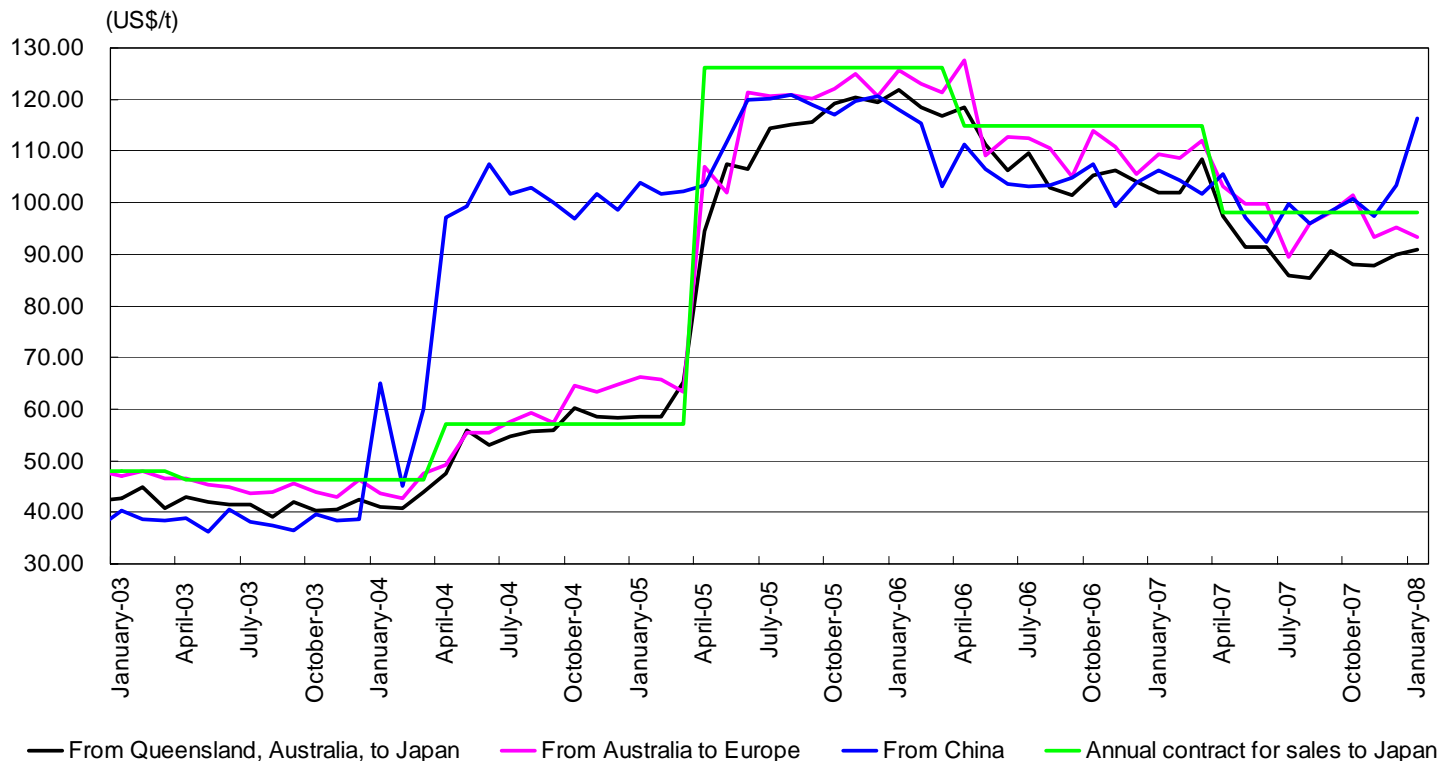
Notes: Barlow Jonker Index : a spot price for steaming coal, FOB Newcastle, Australia.

RB Weekly Index : a spot price for steaming coal, FOB Richards Bay, South Africa.

Source: Barlow Jonker, "Coal Fax"; Global Coal data; etc.

## Trend of Metallurgical Coal (hard Coking Coal) Prices

- ◆ Metallurgical coal prices rose sharply in 2005 (2004 in the case of Chinese coal).
- ◆ Prices fell in the two subsequent years as the supply capacity was expanded in response to high prices.
- ◆ However, fears of a supply shortage grew in the market in 2007, and it was reported that the spot price for export to India exceeded the price in 2005.

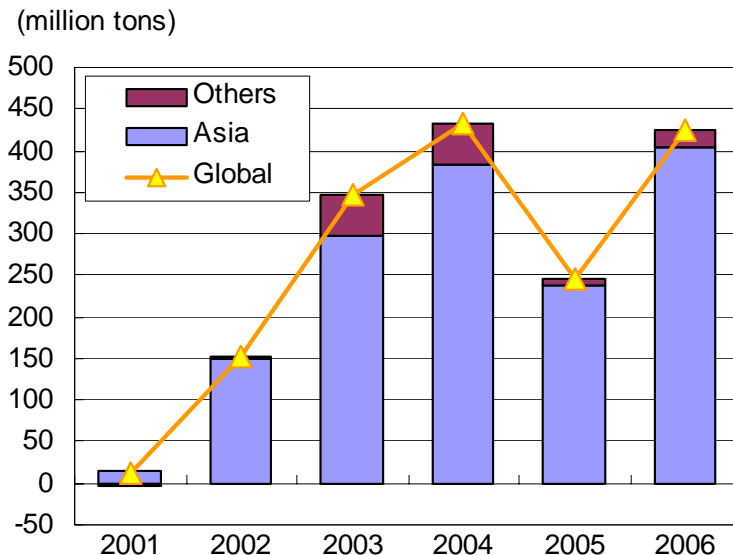


Source: Barlow Jonker "Australian Coal Report" and "China Coal Report" ; etc.

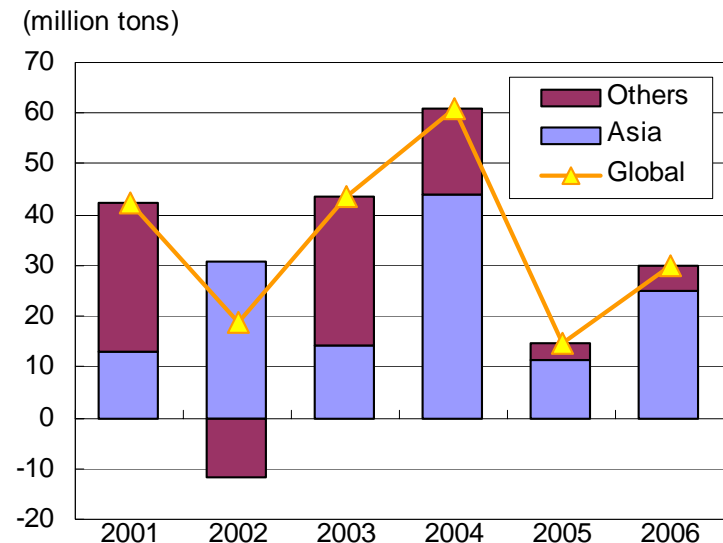
## Major Drivers of Coal Price Rising (Demand Side)

- ◆ **Growth in supply capacity unable to match growth in demand**
- ◆ Growth of demand and imports by Asia
- ◆ Growth of demand in existing importers (such as South Korea, Taiwan and Japan)
- ◆ Growth of imports by new importers (such as India and China)

**Global consumption of coal  
(year-on-year increment)**



**Global imports of coal  
(year-on-year increment)**



Note: Figures for 2006 are estimated.  
Source: IEA "Coal Information 2007"

# Major Drivers of Coal Price Rising (Demand Side)

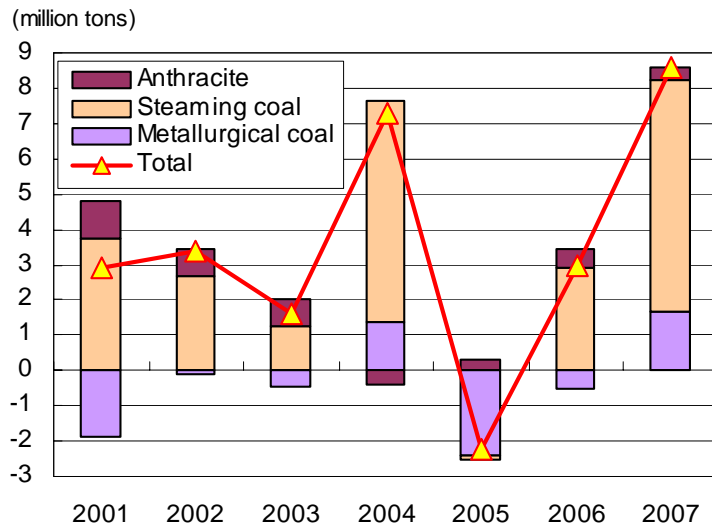
## South Korea:

- ◆ Imports in 2007 amounted to 88.3 million tons (up 8.6 million tons from the previous year): steaming coal 65.6 million tons (up 6.6 million tons) and metallurgical coal 17.3 million tons (up 1.7 million tons).

## Taiwan:

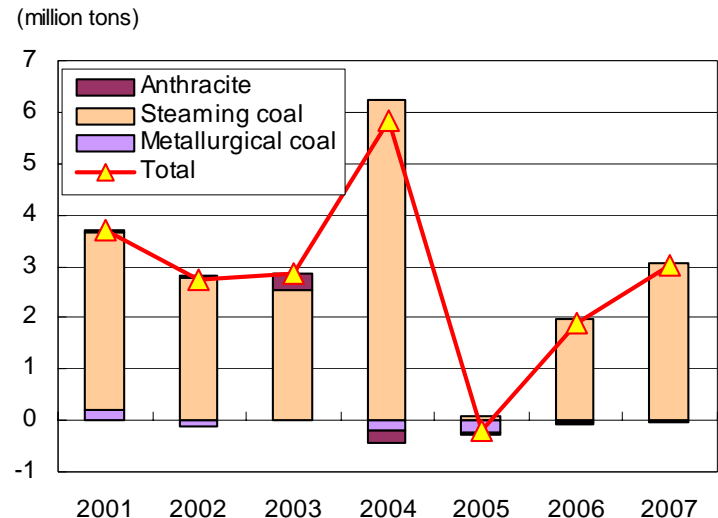
- ◆ Imports in 2007 amounted to 65.2 million tons (up 3.0 million tons from the previous year): steaming coal 60.3 million tons (up 3.1 million tons) and metallurgical coal 4.8 million tons (down 0.05 million tons).

### Coal imports by South Korea (year-on-year increment)



Source: Korea Trade Statistics

### Coal imports by Taiwan (year-on-year increment)



Source: Bureau of Energy, Ministry of Economic Affairs



# Major Drivers of Coal Price Rising (Demand Side)

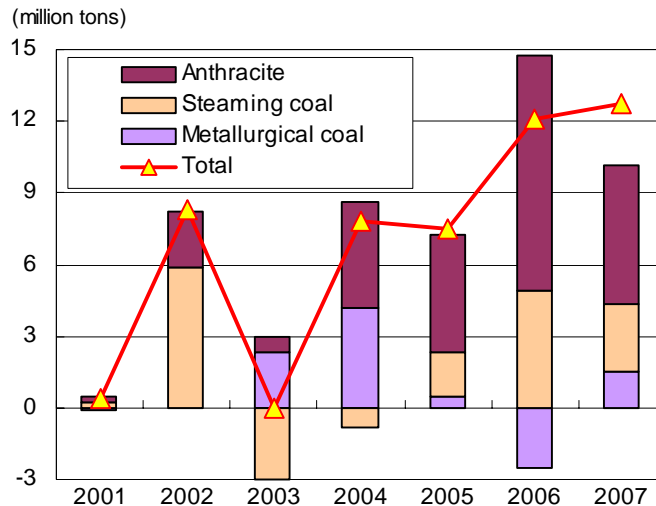
## China:

- Imports in 2007 amounted to 51.0 million tons (up 12.8 million tons from the previous year): steaming coal 13.3 million tons (up 2.8 million tons), metallurgical coal 6.2 million tons (up 1.6 million tons) and anthracite 28.4 million tons (up 5.8 million tons).

## India:

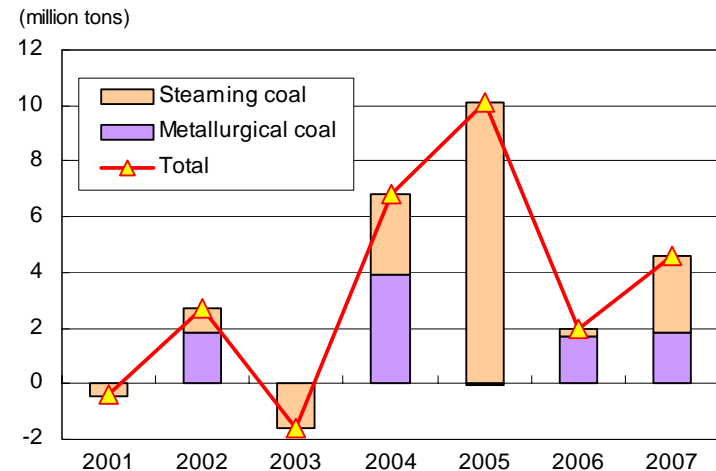
- Imports in 2006 amounted to 40.5 million tons (up 1.9 million tons from the previous year): steaming coal 21.9 million tons (up 0.2 million tons) and metallurgical coal 18.6 million tons (up 1.7 million tons). Imports in 2007 from January to June amounted to 24.8 million tons (up 4.6 million tons). India increased its imports from Indonesia (steaming coal), Australia (metallurgical coal) and South Africa (steaming coal).

### Coal imports by China (year-on-year increment)



Source: TEX report, etc.

### Coal imports by India (year-on-year increment)



Note: The import volume in 2007 is compared with 2006 by the sum of from January to June.

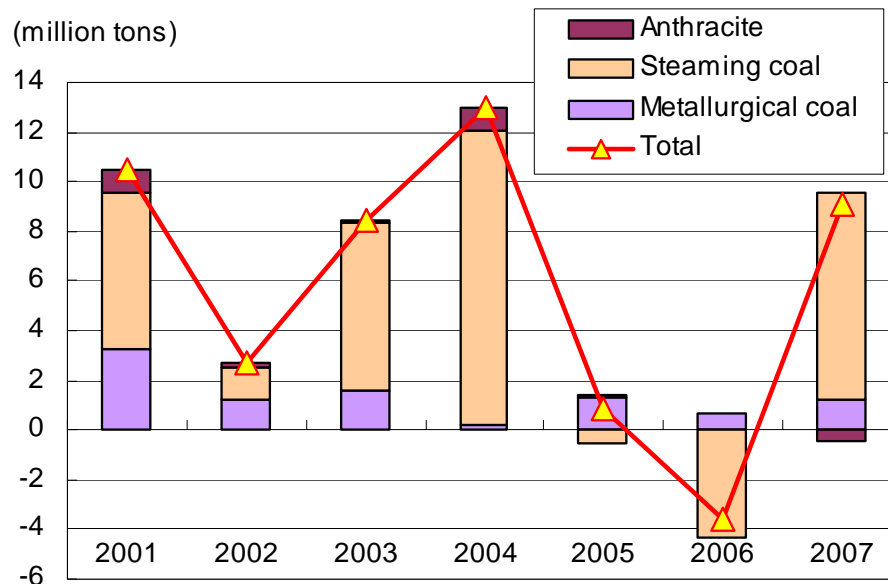
Source: IEA, "Coal Information 2007" and TEX report

## Major Drivers of Coal Price Rising (Demand Side)

Japan:

- ◆ Imports in 2007 amounted to 186.5 million tons (up 9.3 million tons from the previous year): steaming coal 95.2 million tons (up 8.5 million tons), metallurgical coal 85.8 million tons (up 1.2 million tons) and anthracite 5.5 million tons (down 0.4 million tons).

### Coal imports by Japan (year-on-year increment)

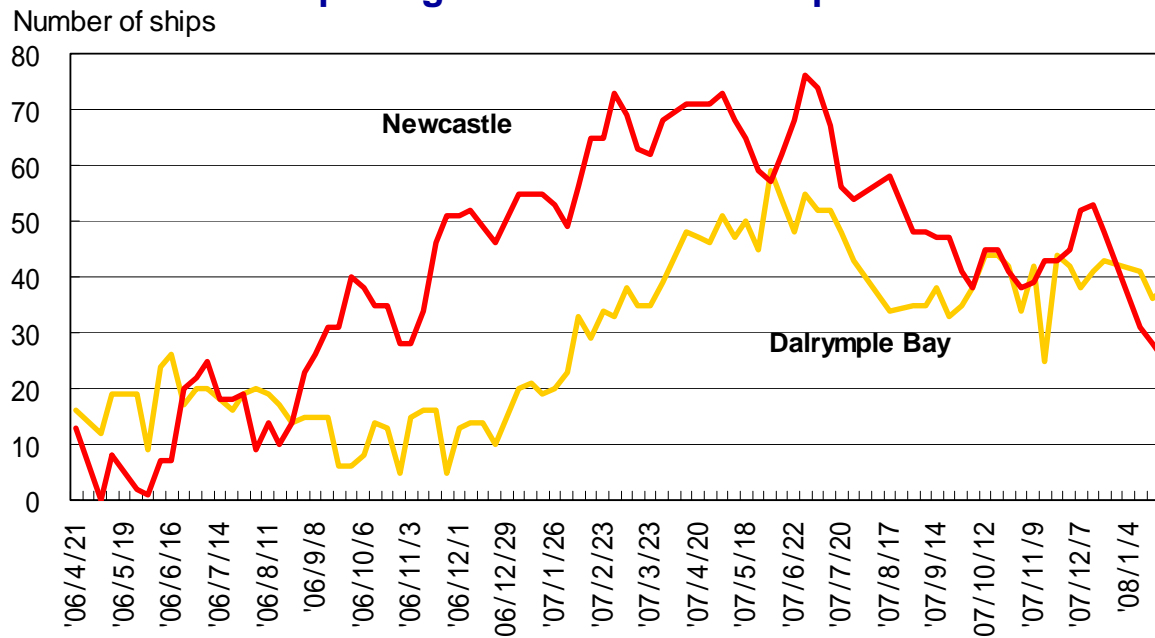


Source: Japan Trade Statistics

# Major Drivers of Coal Price Rising (Supply Side)

- ◆ **Growth in supply capacity unable to match growth in demand**
- ◆ Bottleneck of transportation infrastructure in Australia (export infrastructure capacity unable to meet growth in export demand):
  - Extraordinarily ship congestion at Australian ports due to the above issue
  - Controlling the export volume to solve the ship congestion
- ◆ Australia unable to increase supply in the face of rising export demand + rising FRT prices:
  - Concentration of coal export demand in Indonesia
  - Indonesia reducing export volume for spot sales (inability to respond flexibly to demand)

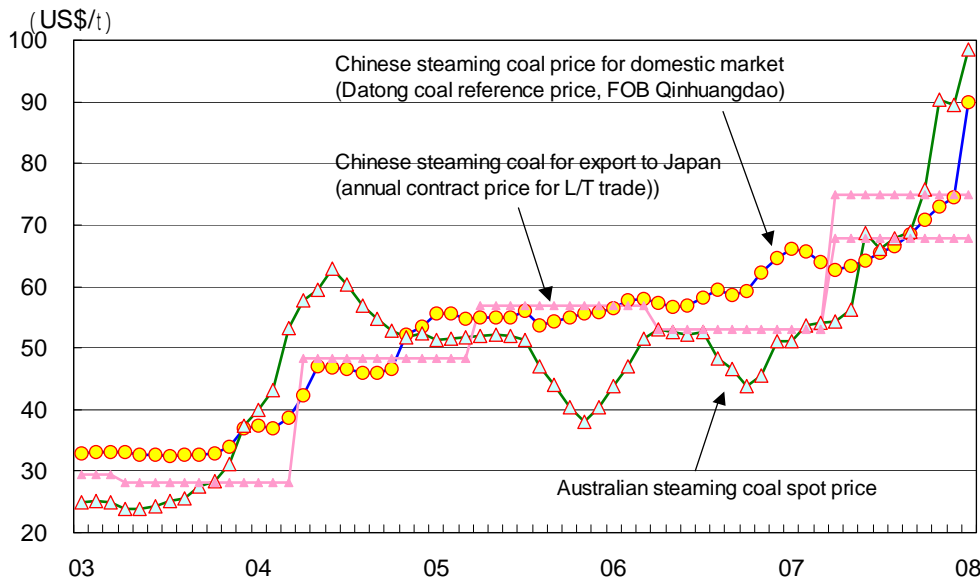
## Ship congestion at Australian ports



# Major Drivers of Coal Price Rising (Supply Side)

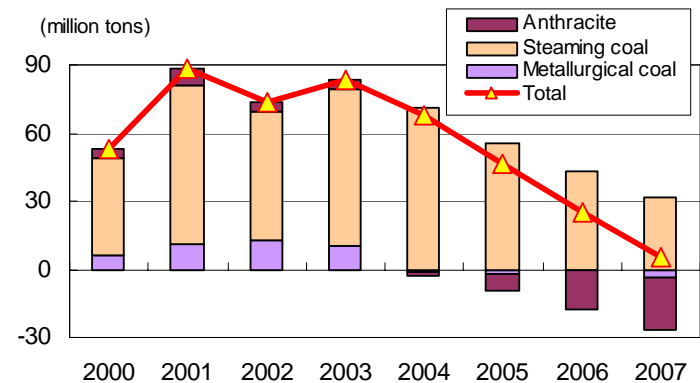
- ◆ **Growth in supply capacity** unable to match growth in demand
- ◆ China reducing exports & increasing imports due to:
  - ↓ - Growth in domestic demand
  - ↓ - Domestic market price > International market price
- ◆ Net export volume decreasing since 2004
  - China depends totally on imports for metallurgical coal and anthracite.

## Trend of Chinese steaming coal price



Source: Balow Jonker, "China Coal Report" & "Coal Fax" ; etc.

## Trend of net coal exports by China

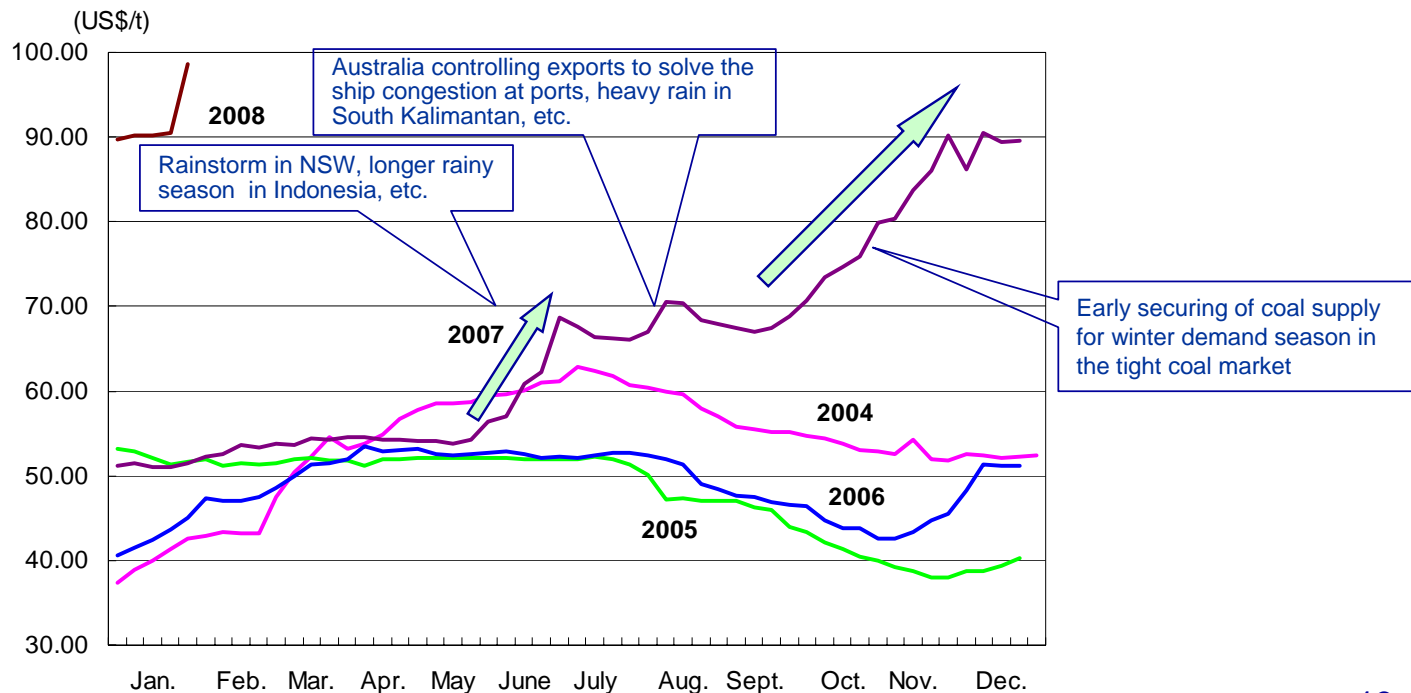


Source: TEX report, etc.

# Major Drivers of Coal Price Rising (Supply Side)

- ◆ Drop in production due to natural disaster
  - Rainstorm in New South Wales, Australia (early June)
  - Delayed lifting of rainy season in Indonesia
  - Heavy rain in South Kalimantan (late July)
- ◆ Drop in production due to accidents and troubles

## Trend of Australian steaming coal spot price (Barlow Jonker Index)



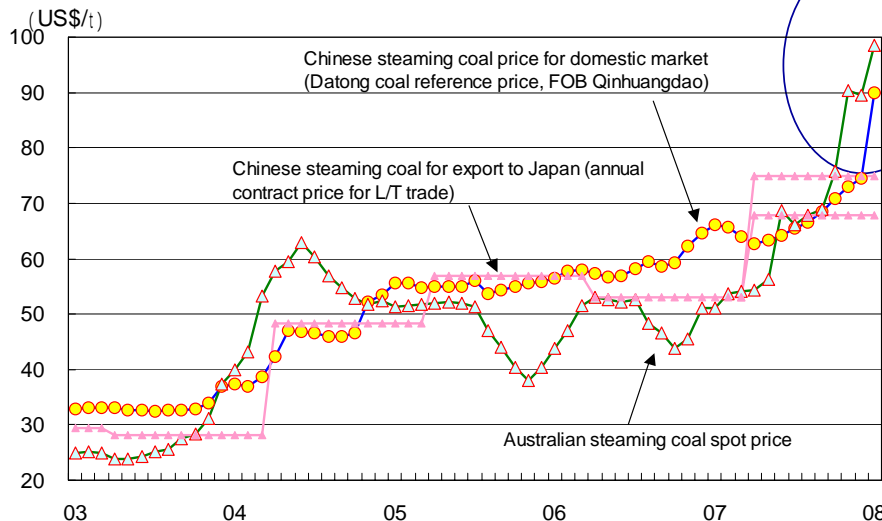
Source: Barlow Jonker, "Coal Fax"

# Recent Coal Market Situation

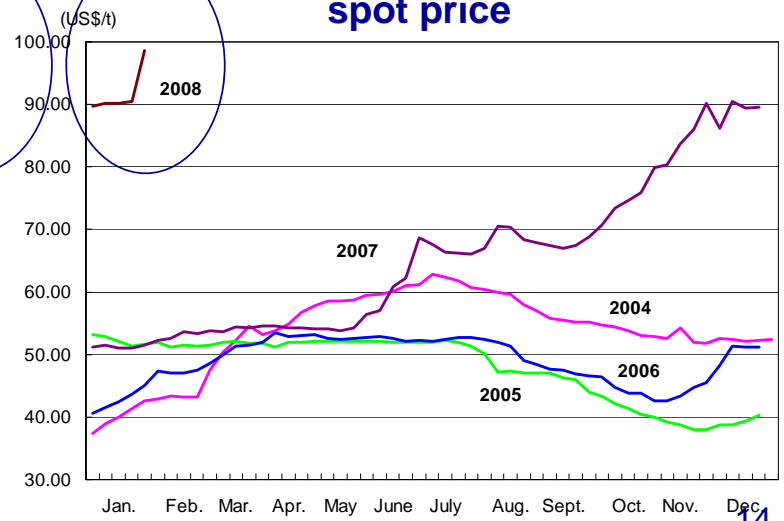
## Successive occurrence of events that may lead to higher prices:

- ◆ Tighter coal supply-demand in China in winter (demand season)
  - Higher electricity demand in winter → Coal shortage in domestic market
  - Additional impacts from heavy snow in mid-south China
  - Suspension of coal exports during the Chinese new year celebration and during the session of the National People’s Congress and the Chinese People’s Political Consultative Conference
- ◆ Heavy rain in Queensland State, Australia (mid January 2008)
  - Some coal mines declared force majeure.

**Trend of Chinese steaming coal price**



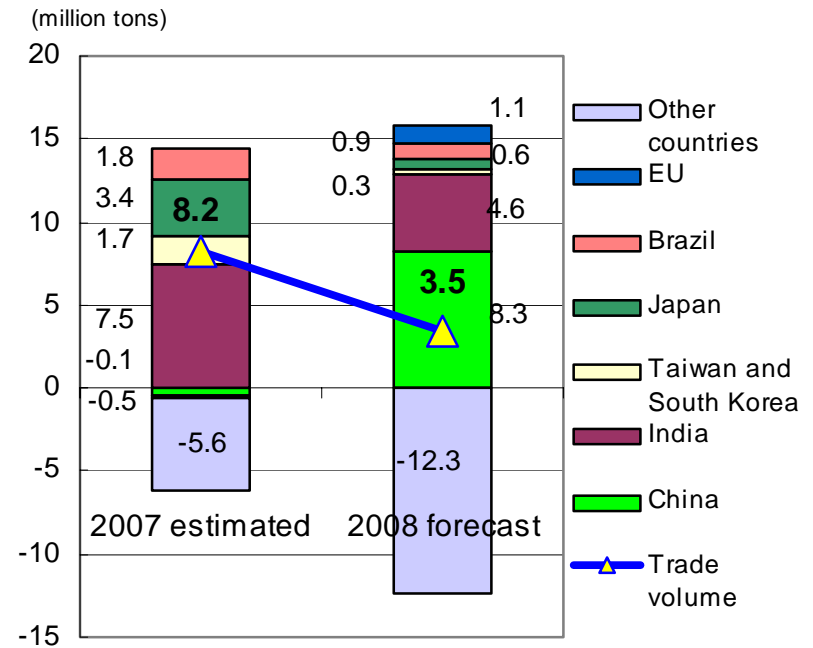
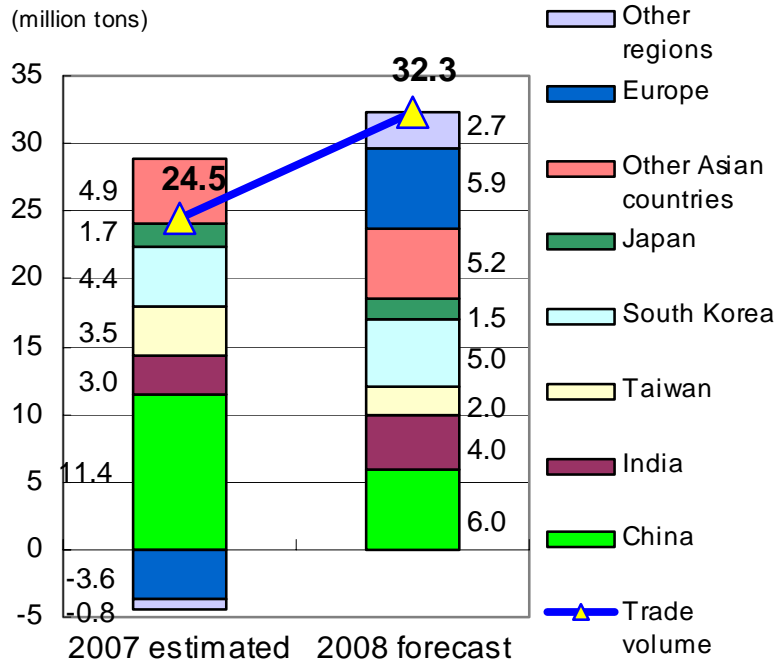
**Trend of Australian steaming coal spot price**



# Coal Trade in 2008 (Comparison with 2007)

## steaming coal

## Metallurgical coal



Source: abare, "Australian Commodities, December quarter"

## Outlook for the Asian Market for 2008 and Subsequent Years

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### **Tight supply-demand for coal will continue. Pay attention to:**

#### ◆ Growth in demand

- ✓ In South Korea, coal-fired power plants commissioned in 2007 will begin full-scale operation. Moreover, seven new coal-fired power plants will start operation between the end of 2007 and 2009.
  - Steaming coal consumption will continue to grow in 2008 and subsequent years.
- ✓ India and Southeast Asian countries will increase their demand and imports of coal.
- ✓ Taiwan closed three old coal-fired power plants in 2007 and then coal consumption by Taiwan Power Company will decrease in 2008 (outputs from coal-fired power closed will be covered by new LNG-fired power plant).
  - From 2012, however, new coal-fired power plants are scheduled to start up.

#### ◆ China's domestic demand and import/export

- ✓ Domestic demand will continue to grow, driven mainly by power generation demand.
  - Tight supply-demand will continue at least several years.
- ✓ Import/export volume will depend on supply-demand situation and the coal price trend in the China domestic market and international market, but:
- ✓ Imports basically will probably continue to increase to meet the demand in the coastal area.
- ✓ Exports will probably decrease or remain level.



## Outlook for the Asian Market for 2008 and Subsequent Years

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### **Tight supply-demand for coal will continue. Pay attention to:**

#### ◆ Export potential of Australia

- ✓ Even though export infrastructure is being expanded, growth in capacity will not catch up with growth in demand at least in 2008.
- ✓ If expansion projects go well, export capacity is expected to match the demand in around 2010.
- ✓ Suppliers are capable of increasing production to meet growth in demand.

#### ◆ Export potential of Indonesia

- ✓ Domestic demand is growing, driven mainly by the demand for coal in the power generation sector.
  - Annual export volume will hit a peak after 2010.