The impact of China’s growth on minerals supply and demand

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China – will demand overwhelm supply?

• We expect China to be a large, sustainable, consumer of imported raw materials

• While short term spikes may exist, we expect supply to meet demand

• A longer term global power shift should not be ignored when thinking about consumption of raw materials
We expect China to be a large, sustainable, consumer of imported raw materials

- China is a large consumer but short of resources
- Consumption as % of world total doubles each decade
- Urbanisation and associated infrastructure the key drivers
- Likely economic development model “continental-maritime” not “export” in style
- China’s growth is not a short term phenomenon
China is a large consumer but is short of resources

China’s % of world production and consumption in 2003

Source: CRU, IEA, BHP Billiton
Note: Metallurgical coal and thermal coal markets show total supply and demand, not just seaborne trade
Consumption as % of world total doubles each decade

China % of world consumption (Al, Cu, Fe Ore, Ni)

Source: Macquarie Research
Urbanisation and associated infrastructure the key driver

China urbanisation - %; population in millions

Source: China Statistics Yearbook, BHP Billiton
Urbanisation and associated infrastructure the key driver

China urbanisation (%) per GDP/capita category

GDP (US$bn) breakdown

Source: China Statistics Yearbook, BHP Billiton
1600 km west of Shanghai
Chongqing: pop. 7 million...and rising
...20 mill. sq metres added in 2004 in Chongqing Province
Likely economic development model “continental-maritime” not “export” in style

...High resource intensity in fixed investment

China steel consumption by category in 2003

- Construction: 68%
- Capital Goods: 17%
- Other: 11%
- Roads: 4%

Source: BHP Billiton
Likely economic development model “continental-maritime” not “export” in style

China aluminium consumption by category in 2003

- Construction: 36%
- Capital Goods: 20%
- Power Infrastructure: 15%
- Capital Goods: 15%
- Transport: 11%
- Consumer Durables: 10%
- Other: 8%

Source: BHP Billiton
Likely economic development model “continental-maritime” not “export” in style

China copper consumption by category in 2003

- Domestic Goods: 18%
- Exported Goods: 8%
- Structures: 74%

Source: BHP Billiton
Likely economic development model “continental-maritime” not “export” in style

...China following a resources intensive path

Source: Macquarie Research, CRU, ICSG
China’s growth is not a short term phenomenon (but it is cyclical)

China GDP growth (%)

Source: China Statistics Yearbook, Global Insight
While short term spikes may exist, we do not expect permanent shortage of supply

- Price development will be different per commodity
- Prices (and expectations) are powerful inducers of capacity
- The gap between supply and demand can be filled
Price development will be different per commodity

Source: CRU, BHP Billiton
Prices are powerful inducers of capacity

Latent capacity - copper example

Inducement Price (US c/lb) vs Cumulative capacity ('000 t)

Source: Brook Hunt, BHP Billiton (Theoretical long run copper price required to yield an 8% IRR)
The gap between supply and demand can be filled

Latent capacity - copper example

'000 tonnes Cu

Source: Brook Hunt, BHP Billiton
The gap between supply and demand can be filled

Latent capacity - iron ore example

Mill. t/y Fe Ore

2004 2006 2008 2010

Source: BHP Billiton
The gap between supply and demand can be filled

Latent capacity – energy coal in China

Source: BHP Billiton
The gap between supply and demand can be filled

Latent capacity – seaborne hard coking coal example

Demand

Supply Capacity

2003

2010

Identified Capacity Potential

Existing Capacity

Asia

Other

BHPB

Other

Source: BHP Billiton
Longer term global power shift should not be ignored when thinking about Chinese consumption…

…and demand ‘S curves’ for different minerals will not be identical

Source: Goldman Sachs Research