Geography of steel raw materials - policy implications.

Magnus Ericsson
World mining for 150 + years

Sources: Raw Materials Data, 2011 and Sames.
Background

Mining:

- Society needs metals
- Global industry
- Iron ore, copper and gold dominates
- Cyclical business
- Long term industry
- Current decade positive – for miners
Myths

- Metals are running out
- Mining is not sustainable
- China is holding the world to ransom
Are metals a depleting resource?

Manganese drawing: Kaianders Sempler.
Growth of resource base

Source: Crowson.
Metals are not running out!

Manganese drawing: Kaianders Sempler.
Is mining sustainable?

Vanadium drawing: Kaianders Sempler.
Garpenberg - since 13th c.

Mining can be sustainable

Courtesy: Boliden.
Mining is for many countries the only chance to start economic development!

Vanadium drawing: Kaianders Sempler.
Outline

• China
  • Structure of iron ore mining.
  • Exploration.
  • Projects and foreign investments.
• Conclusions.
The role of China

- Exploration
- Foreign Direct Investment
- M&A
Structure of Chinese iron ore mining

Manganese drawing: Kaianders Sempler.
Global iron ore production

Chinese iron ore imports

Global iron ore grades

Chinese structure

- Fragmented corporate structure.
- Many small mines.
- Low grades, underground.
- Vertical integration.

Manganese drawing: Kaianders Sempler.
Chinese exploration

Nickel drawing: Kaianders Sempler.
Global exploration 1

Sources: Total world MEG, China Ministry of Land and Resources.
Chinese exploration 1

Year 2009 total 30.30 billion RMB

Source: MOLAR 2010.
Chinese exploration 2

Year 2009 total  26.11 billion RMB  
Iron ore 2.55  billion RMB

Source: MOLAR 2010.
Chinese exploration

- Major exploration efforts.
- World’s largest exploration spender.
- 400 MUSD iron ore 2009.
- No great results.
New projects
Chinese overseas mines
Chinese foreign operations

Chinese foreign projects

## Iron ore projects

- **Operating mines**
  - Australia: 19.3
  - Peru: 7.0
  - Brazil: 1.7
  - Canada: 0.8

- **Projects**
  - Australia: 65
  - Peru: 10
  - Sierra Leone: 3

**Total**: ~ 110 Mt

# Chinese projects in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Metal</th>
<th>Company</th>
<th>Share %</th>
<th>Type</th>
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<td>Lalapnazi</td>
<td>Zimbabwe</td>
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New projects

- Foreign expansion slow - not continuous.
- Will increase in the future.
- Long term serious problem.
- Control over imports in focus.
- Not reach internal goals.
Summary China

• Engine of demand – reduced growth pace.
• Largest mining country – many small, high cost mines.
• Largest exploration country since 2010.
• Foreign expansion slow, not continuous.
Policy implications

• Mineral supply – long term, serious problem.
• But no physical scarcity.
• Assessment of China’s role based on facts.
• Window of opportunity for emerging economies.
• More proper political focus:
  • R&D; Training; Balance mining/environment.
• Rare earths not a problem – Chinese import dependency iron ore, copper is!
Thank you!

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REE drawing: Kaianders Sempler.