



Mining Efficiency

Key Drivers for Mining Companies

National Energy Efficiency Conference 2015

November 2015



Mark Read

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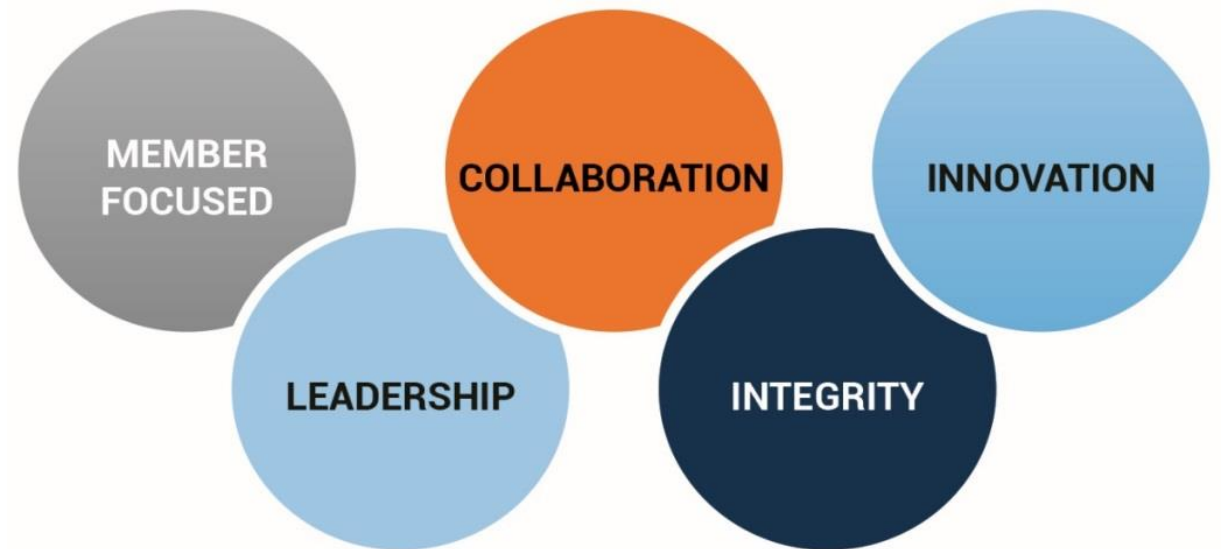
GHD – Global Market Leader Energy and Resources

Who is Austmine

Austmine is the peak industry body in Australia for the mining equipment, technology and services (METS) sector.

We promote the advancement and competitive positioning of Australian technology and collaboration and innovation in mining and resources.

Our vision is to make Australia the true global hub for METS and continue to create opportunities for members globally.



MINING

EQUIPMENT

TECHNOLOGY

SERVICES

EQUIPMENT: BRADKEN, RME Mill Relining Systems, GEEKO SYSTEMS, CSIRO, JKtech SMI Technology Transfer, stornoway, PARSONS BRINCKERHOFF, KEECH, FERO, acquire, ORICA, metso, pwc, ENWARE installingconfidence, GSG MINING FABRICATION™, Outotec, MICROMINE Intuitive Mining Solutions, assetivity, SNL Metals & Mining, DURATRAY, KOMATSU, metsol, Bentley® Sustaining Infrastructure, MEC MINING, Bisalloy Steels, VAYERON, centric mining systems, jord, RCR, NEPEAN Mining, CleanTeQ environmental innovation, ivolve, amec foster wheeler, CSA Global Resource Industry Consultants, TOMRA SORTING SOLUTIONS, Korvest Ltd We deliver on our promise, Runge Pincock Minarco, Optiro, GHD, DT AUSTRALIA HERCULES, RYCO HYDRAULIC HOSE, COUPLINGS & FITTINGS, ALS Minerals, ORELOGY, SMEC, resourcesuper

Australian METS - Adding Value from Cradle to Cradle



Market overview

- Hard landing in China
- Time to re-enter the water will be determined by more clarity on the China outlook.
- General economies improving
- The beginning of the US tightening cycle
- When it was published ...?



See Appendix A-1 for Analyst Certification and Important Disclosures



Metals & Mining



Private Clients
13 13 70

Margin Lending
1800 062 794

*For further information
please contact your
Financial Consultant.*

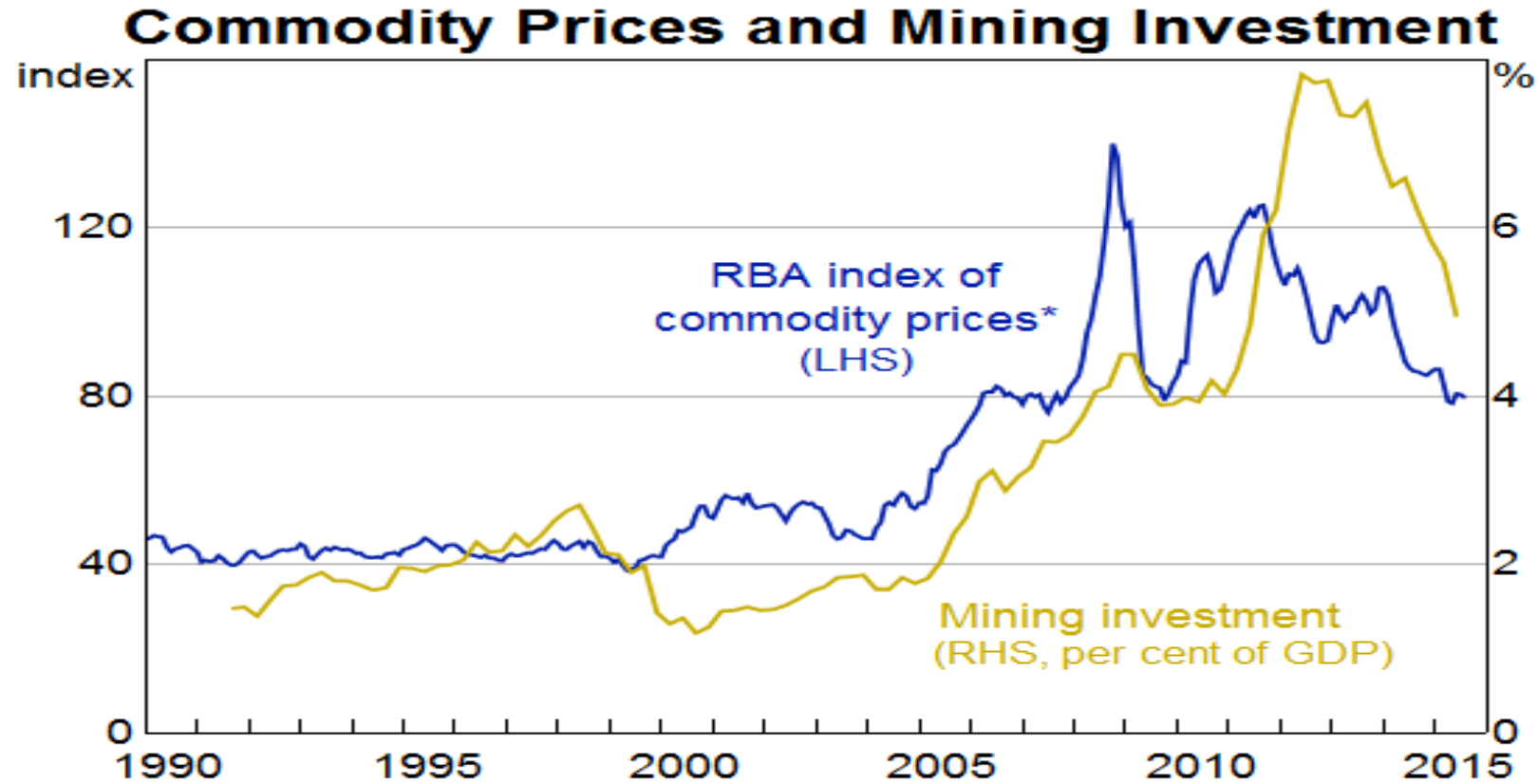
Metals & Mining Strategy

When can we go back in the water?

- Equity markets appear to be pricing in a hard landing in China.
- We believe the markets' fears are overstated and that successful implementation of the government's targeted measures will result in a soft landing.
- Even under a hard landing we see limited risk to forecasts for our preferred commodities (bulks and aluminium). Copper and nickel are more at risk.
- Elsewhere in the world economic growth continues to improve, although there are signs that the US cycle is maturing.
- The time to re-enter the water will be determined by more clarity on the China outlook, rational translation of this into commodity markets and beginning of the US tightening cycle.
- With the US Fed expected to move in late June we expect the sector to outperform in 2H04.
- Current valuations represent compelling value, and our preferred stocks remain the bulks (BHP, RIO and CVRD), the aluminium plays (Alcoa, Alcan, Alumina, Hindalco & Nalco) and Freeport.
- Withdrawal of speculators from base metals markets is removing further downside risk.
- We expect commodity prices to remain above mid-cycle levels for an extended period underpinned by materials intensive demand growth in China - our "Super Cycle Thesis".
- Higher commodity prices will trigger supply increases, but only after a lag, and supply constraints should dominate for the next two to three years.

Market overview

Where we are in the mining cycle ?

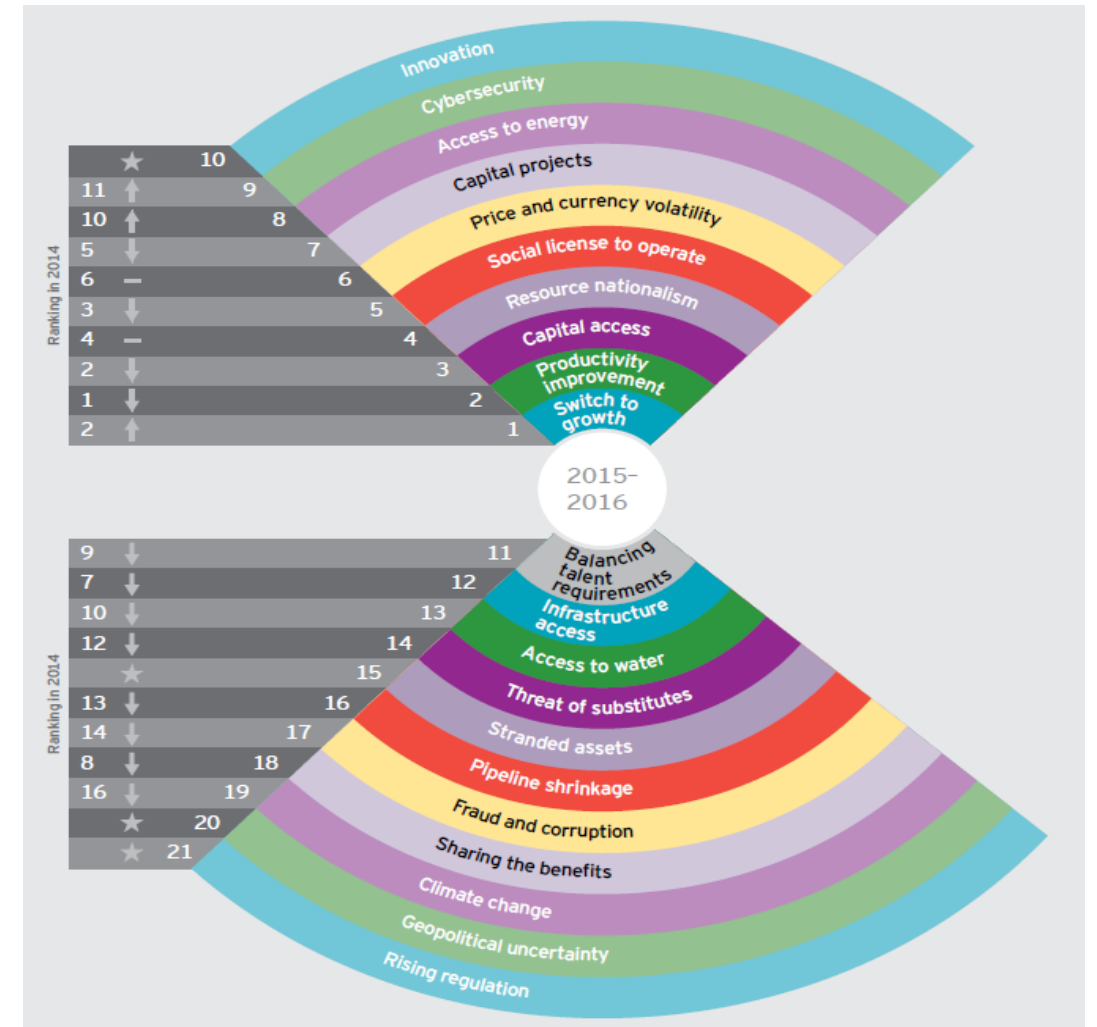


* In Australian dollar terms

Sources: ABS; RBA

EY business risks facing mining and metals

- EY's *business risks in mining and metals report* - ranking the top strategic business risks for companies in the sector.
- It has been published for 8 years in row.
- The business risks for mining and metals companies do not vary significantly from year to year, but the acuteness of the issues and their priority can change, which reflecting the volatile cycle of mining industry.



EY business risks facing mining and metals

Top 10 risks

2015

- 01 Switch to growth
- 02 Productivity improvement
- 03 Access to capital
- 04 Resource nationalism
- 05 Social license to operate
- 06 Price and currency volatility
- 07 Capital projects
- 08 Access to energy
- 09 Cybersecurity
- 10 Innovation

Over 8 years

2008 (peak of supercycle)

- 01 Skills shortage
- 02 Industry consolidation
- 03 Infrastructure access
- 04 Social license to operate
- 05 Climate change
- 06 Rising costs
- 07 Pipeline shrinkage
- 08 Resource nationalism
- 09 Access to energy
- 10 Increased regulation

EY business risks facing mining and metals

Top 3 business risks in last 8 years

	2015	2014	2013	2012	2011	2010	2009	2008
1	Switch to growth	Productivity improvement	Capital allocation and access	Resources nationalism	Resources nationalism	Regulation and compliance	Cost containment	Skill shortage
2	Productivity improvement	Capital dilemmas	Margin protection and productivity improvement	Skills shortage	Skills shortage	Access to credit	Industry consolidation	Industry consolidation
3	Capital access	Social license to operate	Resources nationalism	Infrastructure access	Infrastructure access	Slow recovery or double-dip recession	Access to capital	Infrastructure access

EY business risks facing mining and metals

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3	Capital access			Infrastructure access	Infrastructure access		Access to capital	Infrastructure access



Observations

- In 2008 when at the peak of super cycle, with
 - prices were high
 - companies worked diligently on discovery, development and production
 - concerns are attracting talents, pipeline shrinkage
 - productivity is not an issue.
- While when the prices fall,
 - companies focus on productivity
 - capital access.
- Innovation is new entry to the top list, indicating the trend of industry.
Innovation is a large issue that looms larger in the long term as the sector lags most others.

Challenges for sustainable mining

Find high quality resources

Win license to operate

Mine & refine efficiently

Capital constraints

Mineral resources

- Deeper
- More remote
- Lower grades
- More complex

Environmental resources

- Water scarcity
- Energy costs
- Fragile ecosystems
- More waste

Human resources

- Ageing workforce
- Skill shortages
- Hazardous workplaces
- Technical complexity

Social & corporate resources

- Accountability
- Community development
- Sovereign risk
- Scrutiny
- Slow development cycle

Increasing...

- Costs
- Technical Complexity
- Social & political complexity
- Risk
- Capital requirement

Commentary on future for energy efficiency

- To be in a position to take advantage of the next cyclical upswing, the decision to invest for future growth is now.
 - Think long term strategy and get prepared for the next boom.
 - Innovation is an answer to the productivity challenge, gain first mover advantage when the market returns to growth.
 - Find the right decision makers
- In the current capital constrained markets
 - Payback expectations are very short
 - Target the large not the small opportunities
 - Find the right decision makers

Commentary on future for future opportunities

- Better blasting
- Smarter comminution (CEEC)
- More efficient use of trucks / trucking
- Improved process
- Changed operating regimes
- On site generation / renewables



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THANK YOU

