

HOW DOES EXPLORATION ADD VALUE?

Charles W Goodyear

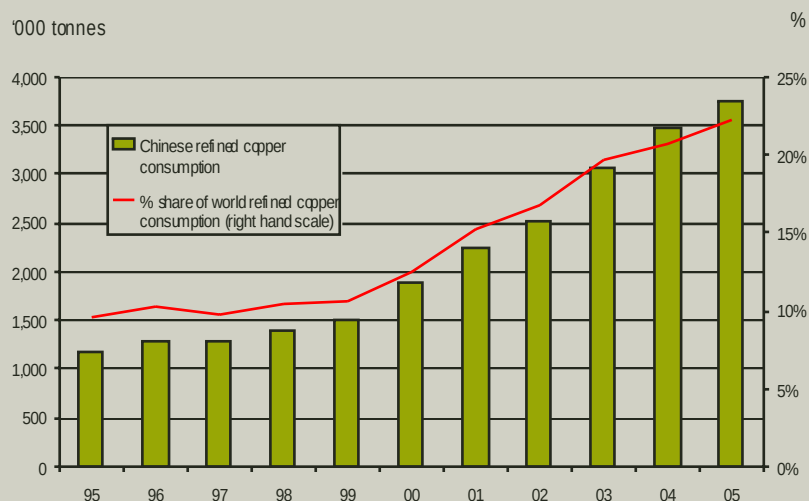
SEG 2006 Conference
Keystone, Colorado



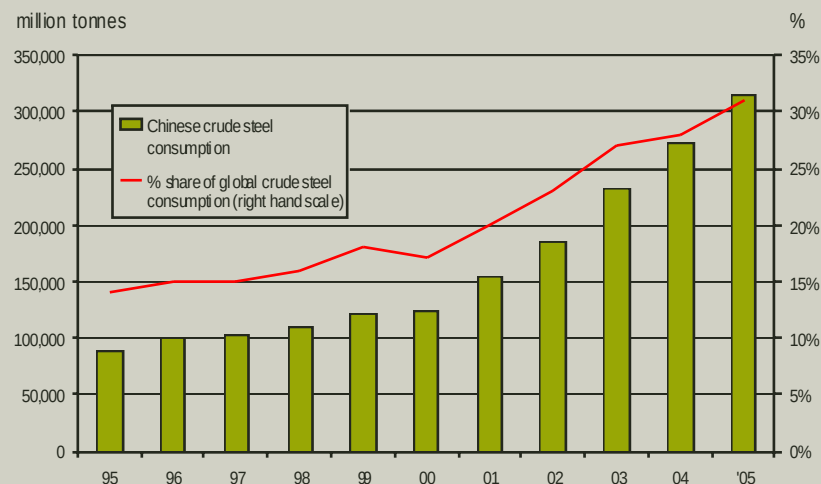
Adding Value through Exploration – Overview

- What are the **challenges** facing the exploration industry?
- The four key aspects of **creating value** through exploration

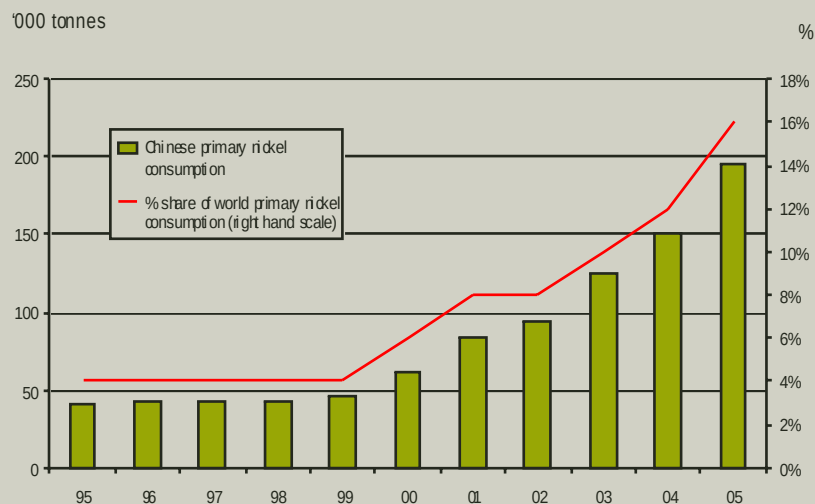
10 year historical Chinese demand



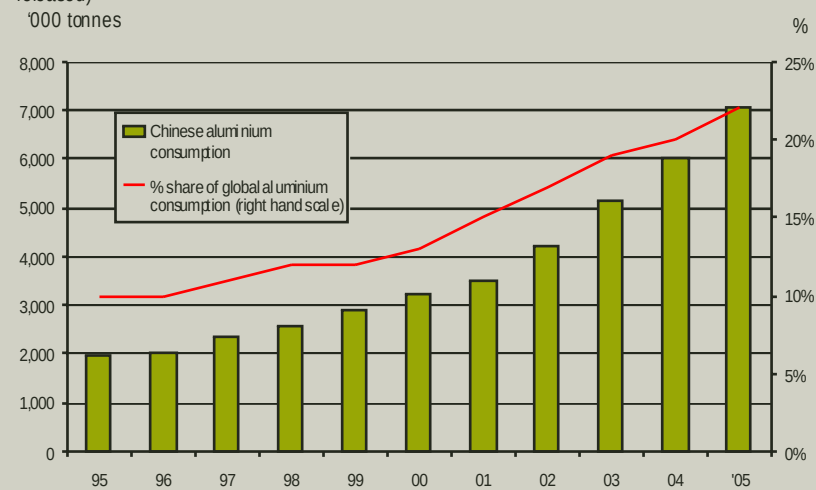
Data: BHP Billiton



Data: IISI, CISA, BHP Billiton (NB: 05 is based on estimate figures as final figures are not yet released)

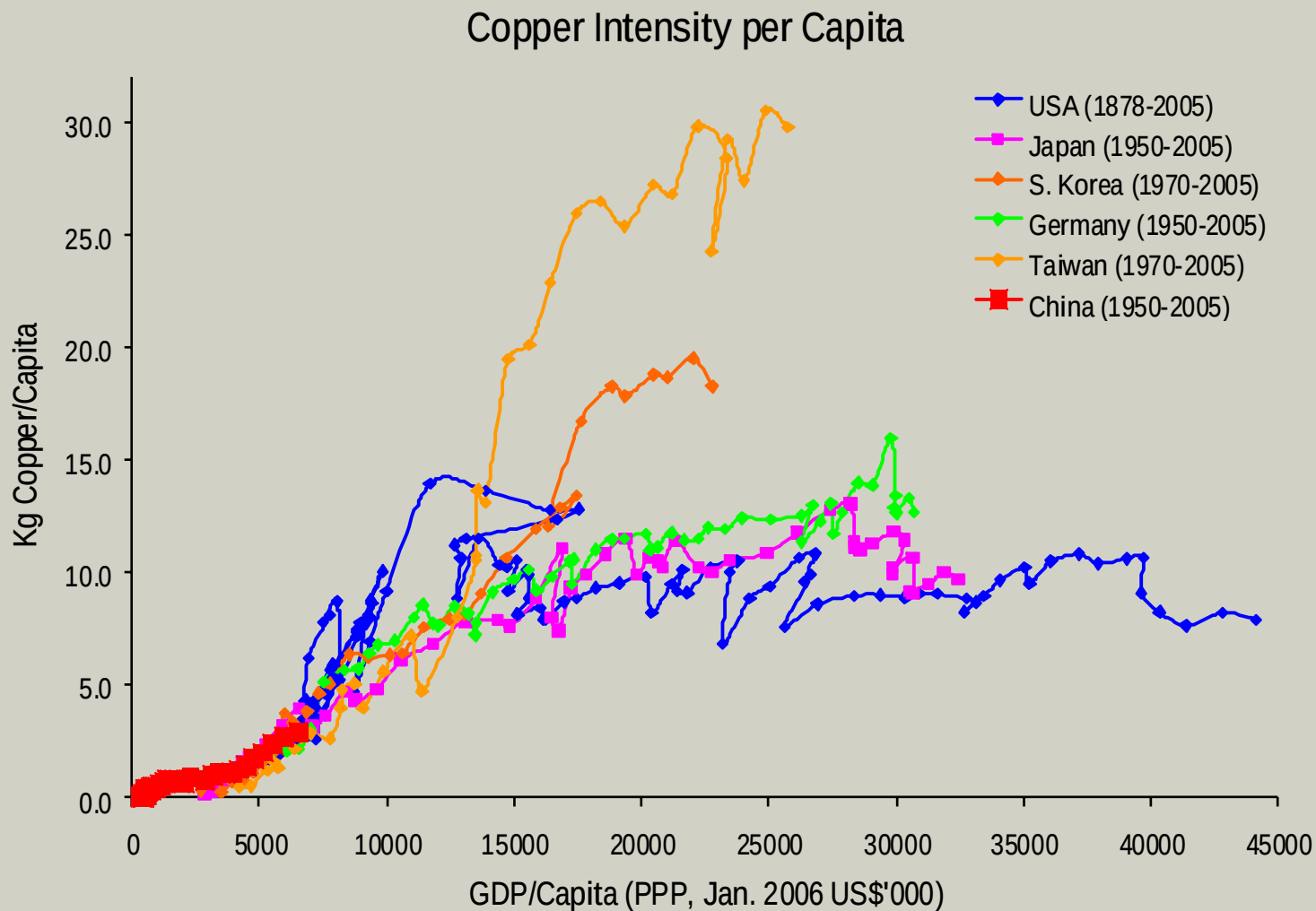


Data: INSG



Data: BH, CRU

Copper intensity of use



The Rate of Discovery has slowed down

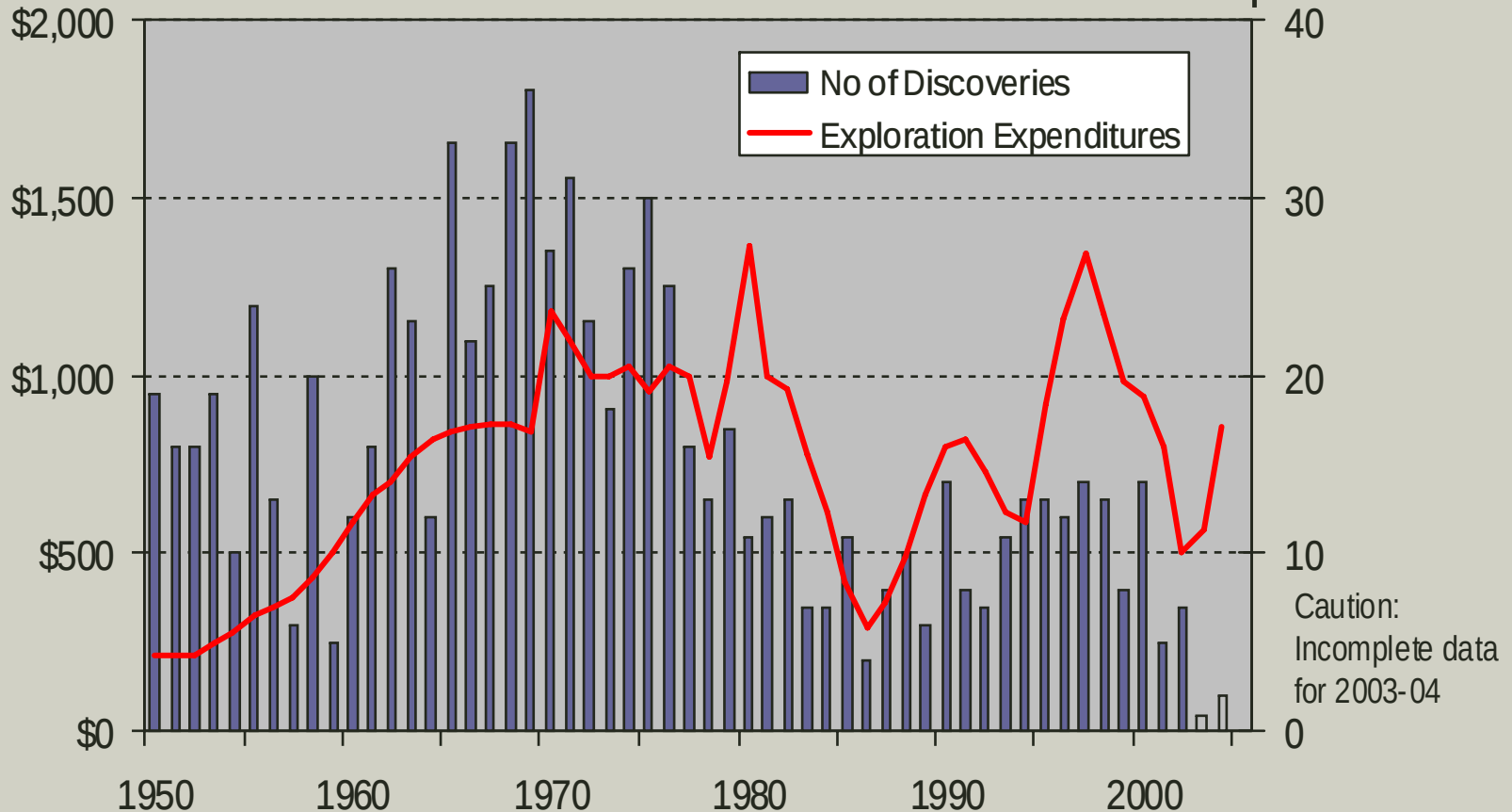
Expenditures on Grassroots + Advanced Base Metals exploration in Western World
Number of Base Metal discoveries > 100kt Cu-equiv in Western World : 1950-2004

Exploration

Expenditures (2005\$m)

Number of Base Metal Discoveries

> 100kt Cu-equiv



Note : Excludes satellite deposits in camps

Exploration Adds Value

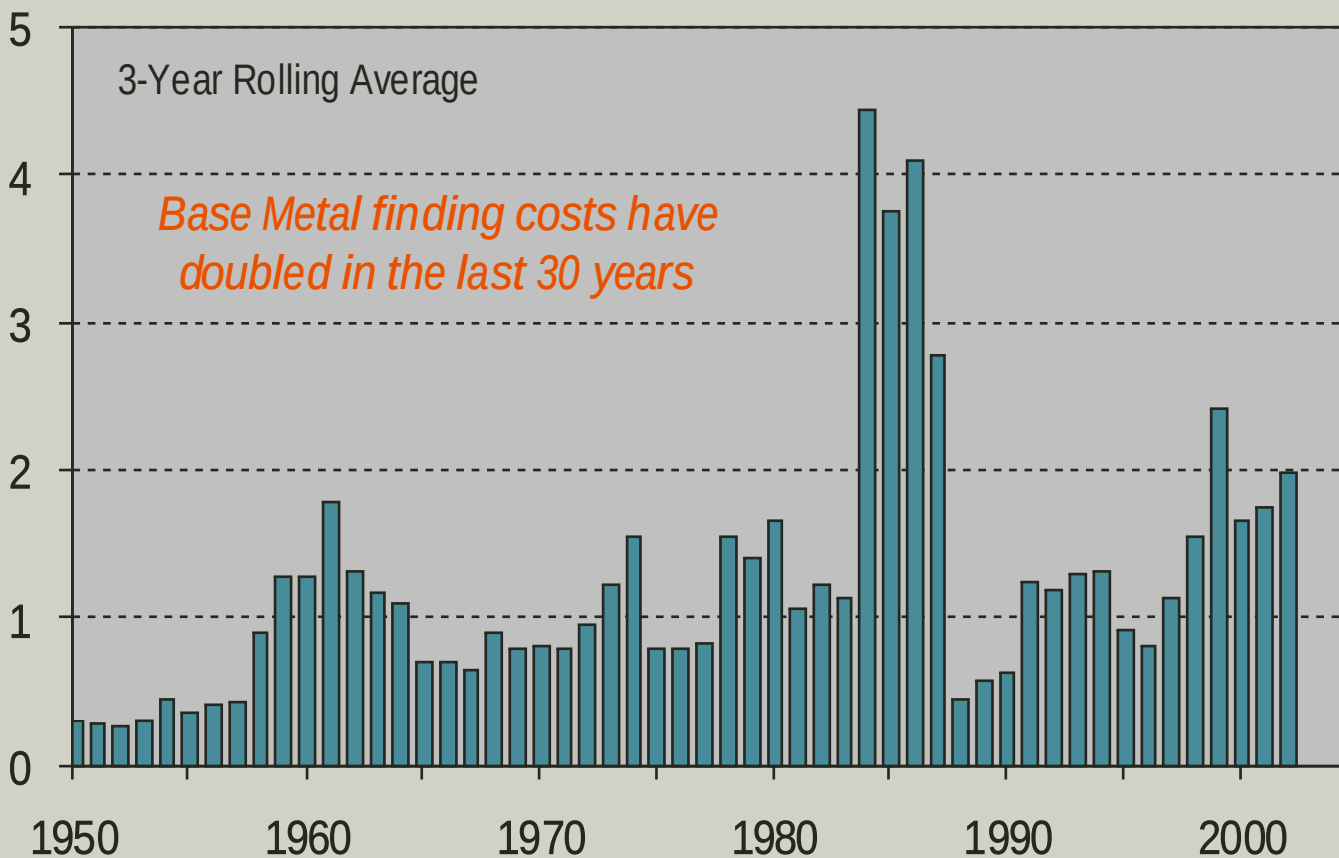
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Source: BHP Billiton September 2005



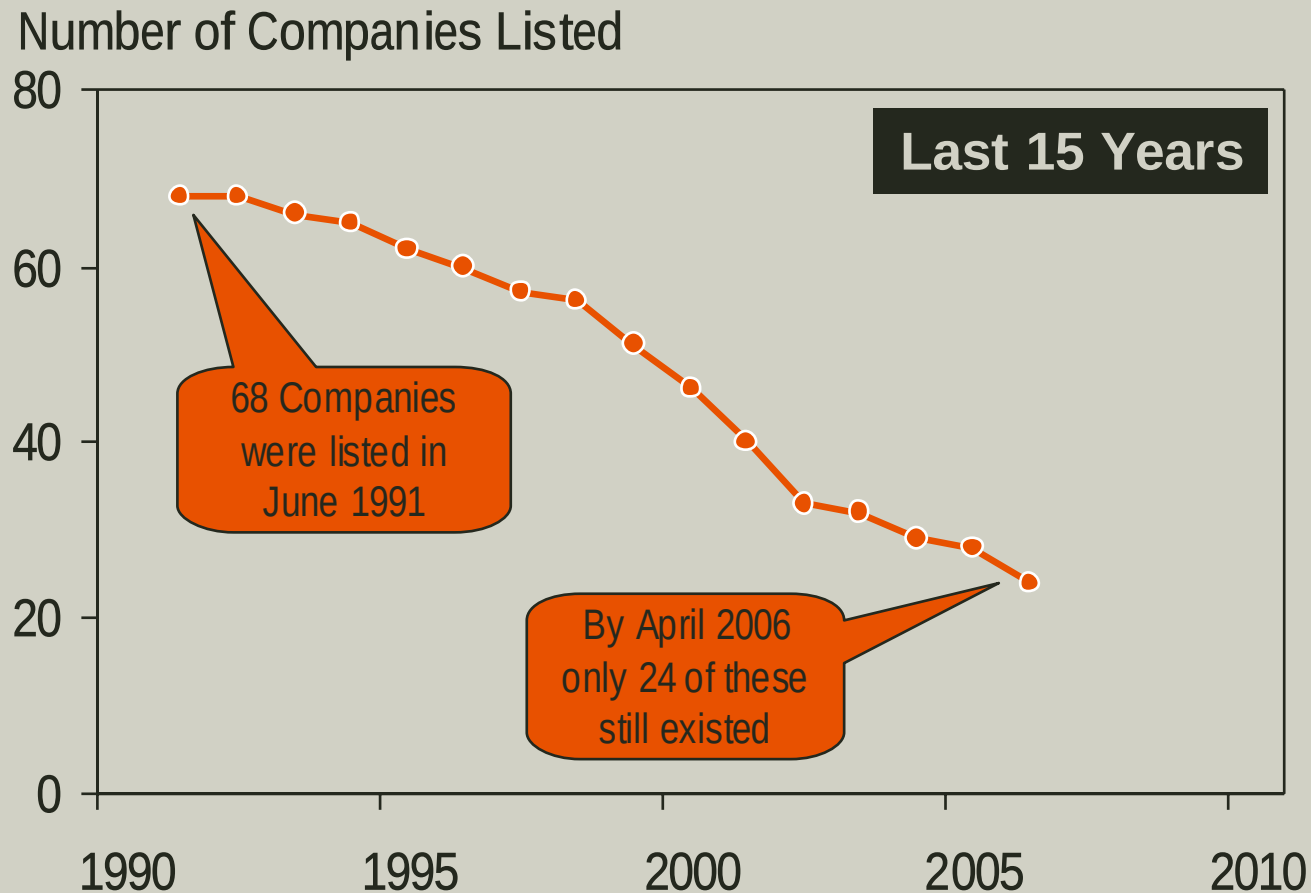
Unit Discovery Costs have increased

Cost per pound found (2005 c/lb Cu-eq)



Source: BHP Billiton September 2005

The Mining Industry continues to undergo consolidation: Number of companies reported in the Mining Journal share price list



The Four Key Aspects of Exploration Value Creation

- Resource availability risk
- Long-term embedded option value of world-class deposits
- Top quartile versus industry average performance
- Integrated business development and brownfields exploration

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The Challenges of New Geographies



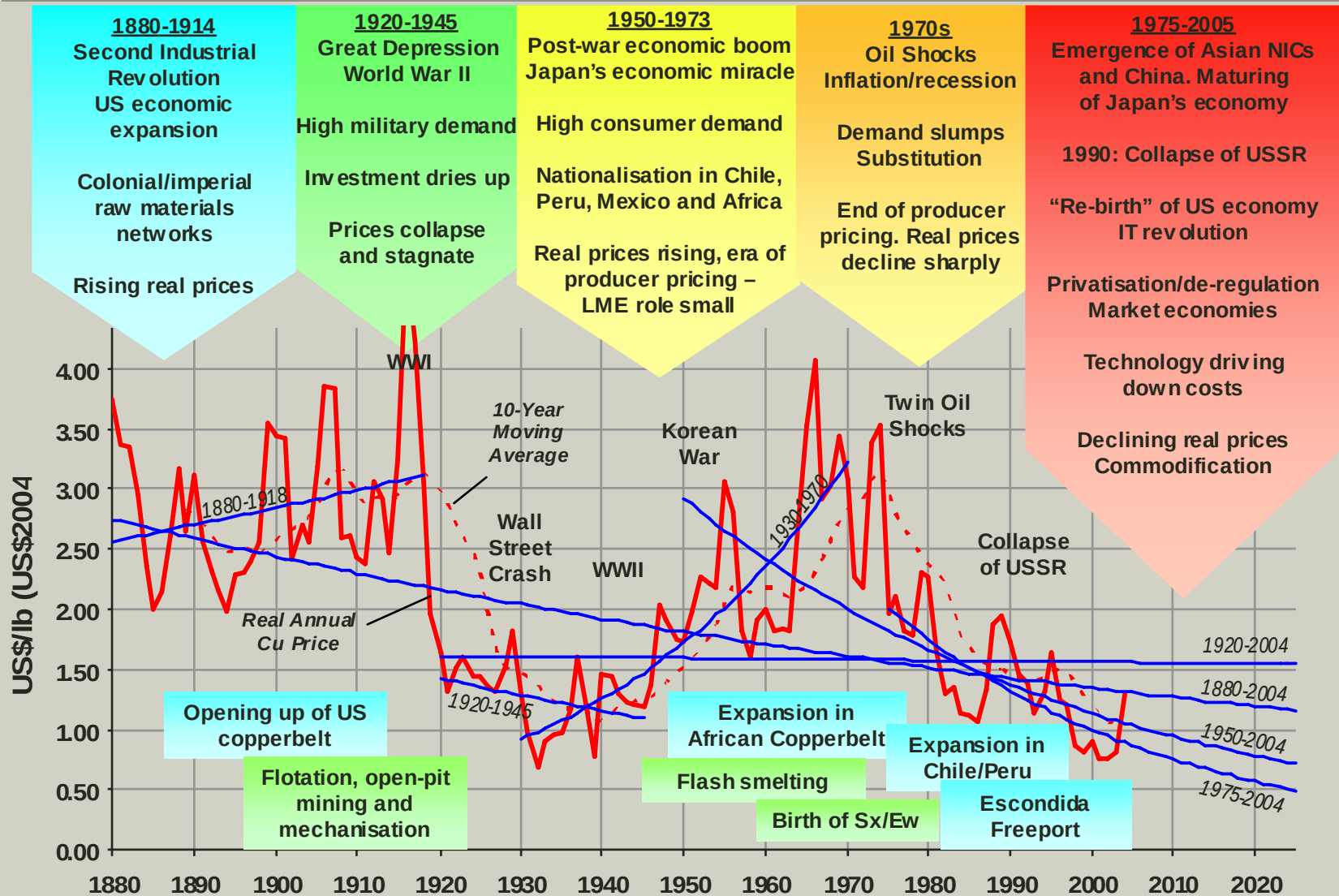
Different Priorities



Maintaining Health & Safety Standards

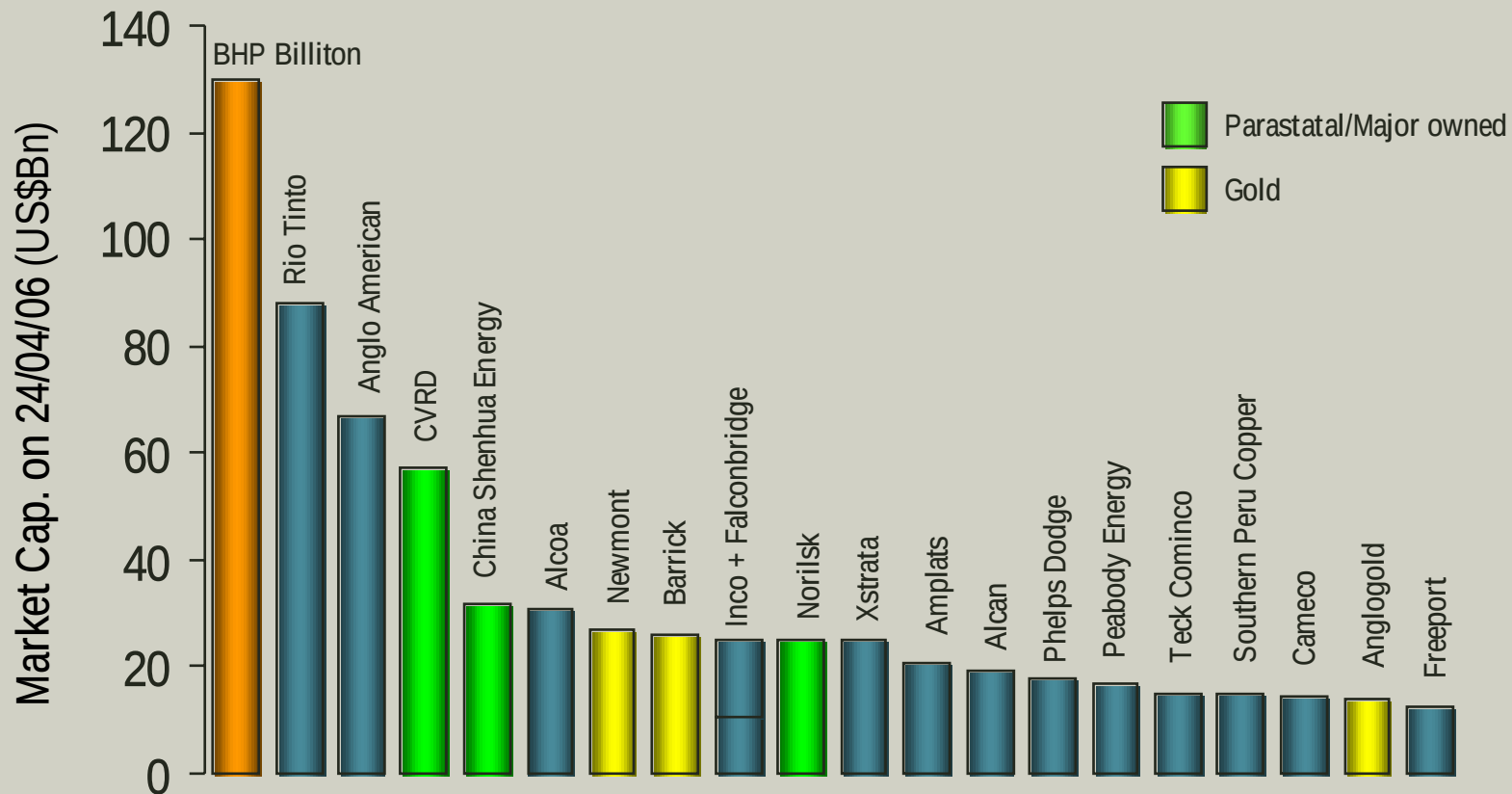


Global Copper Prices – 1880 to 2005



M & A – Opportunities less obvious

Top 20 mining & metal companies

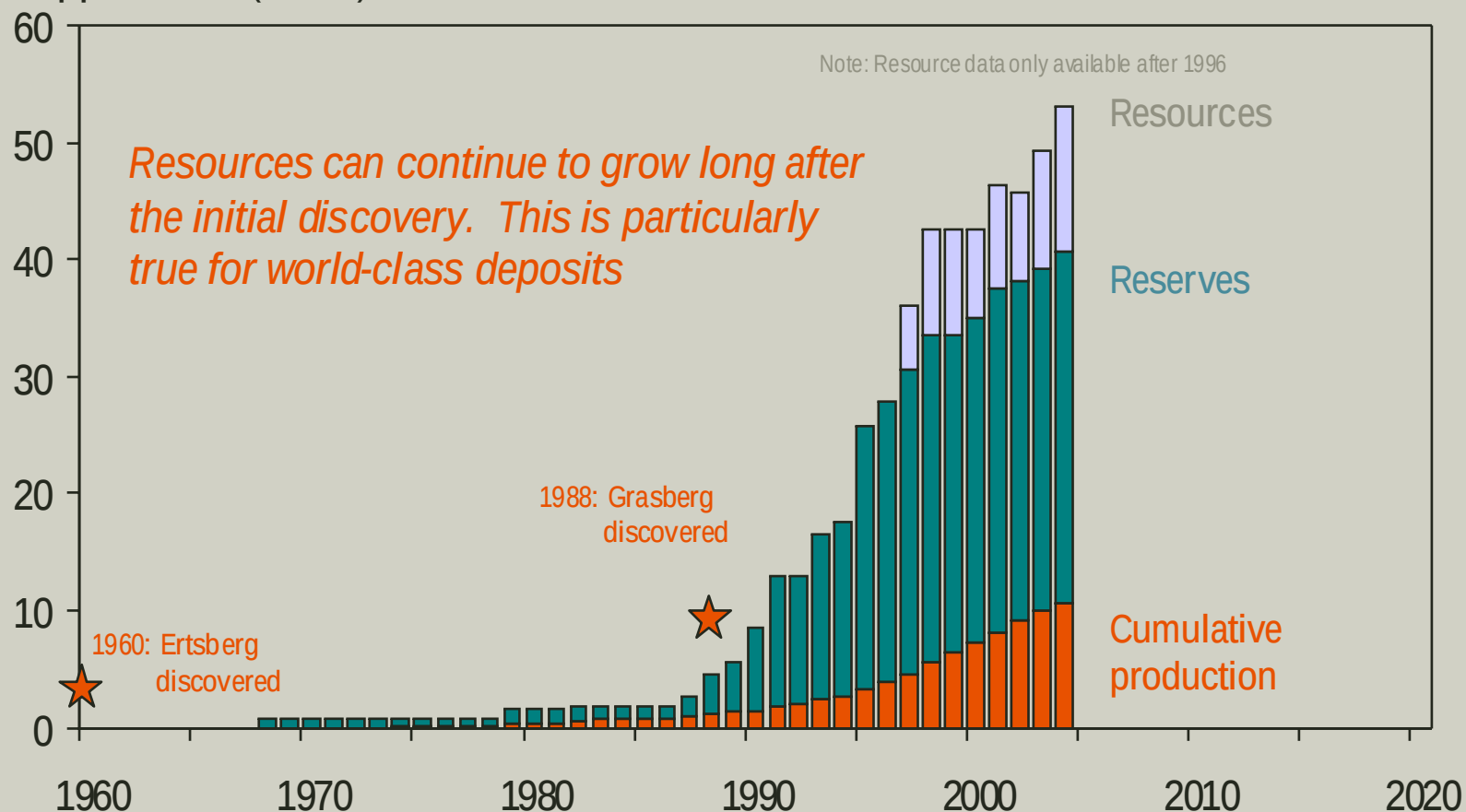


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Growth in Resources at Ertsberg-Grasberg Camp

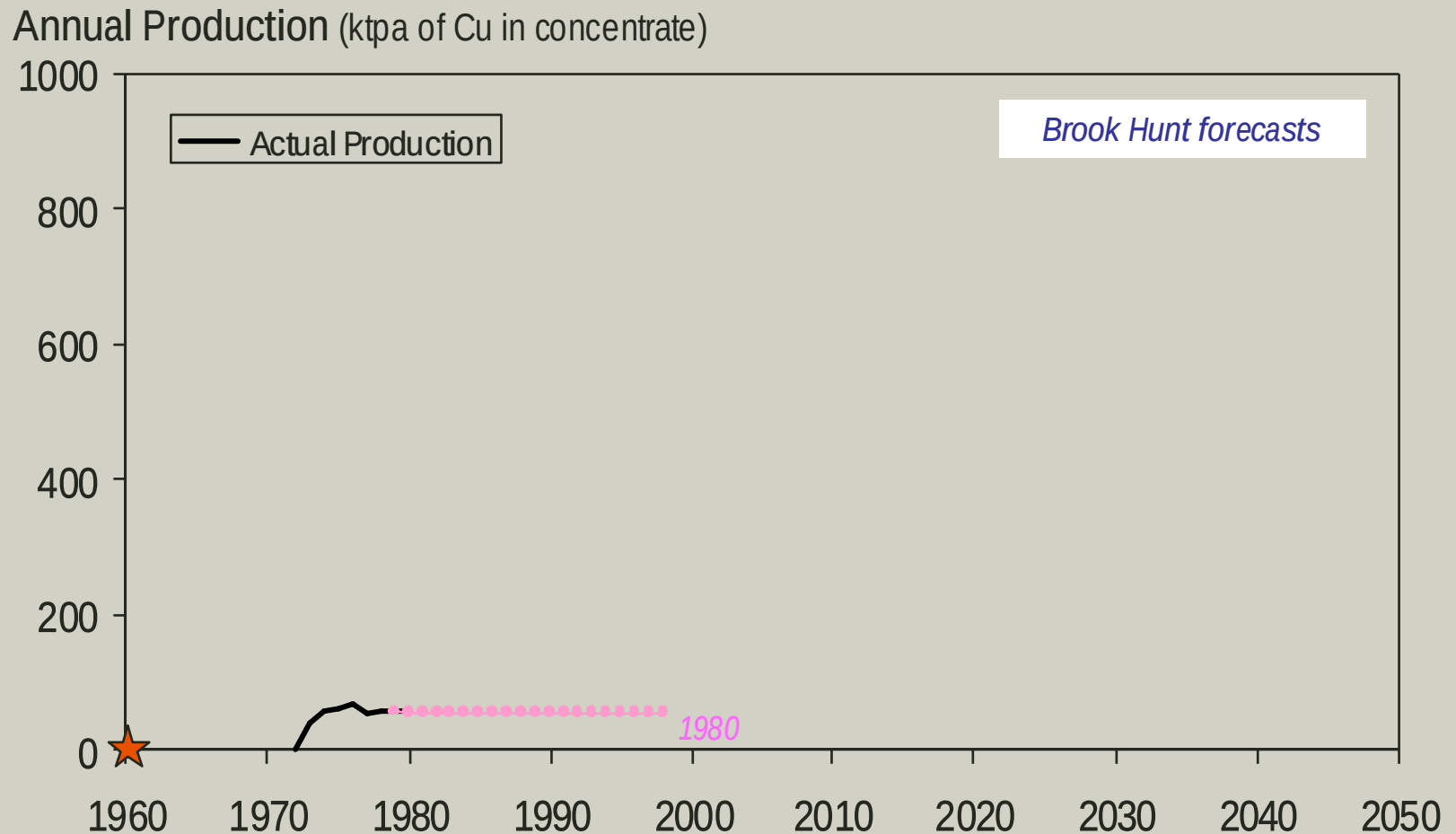
Copper Metal (Mt Cu)



Source: FCX

Copper production from Grasberg Camp

Actual versus forecast

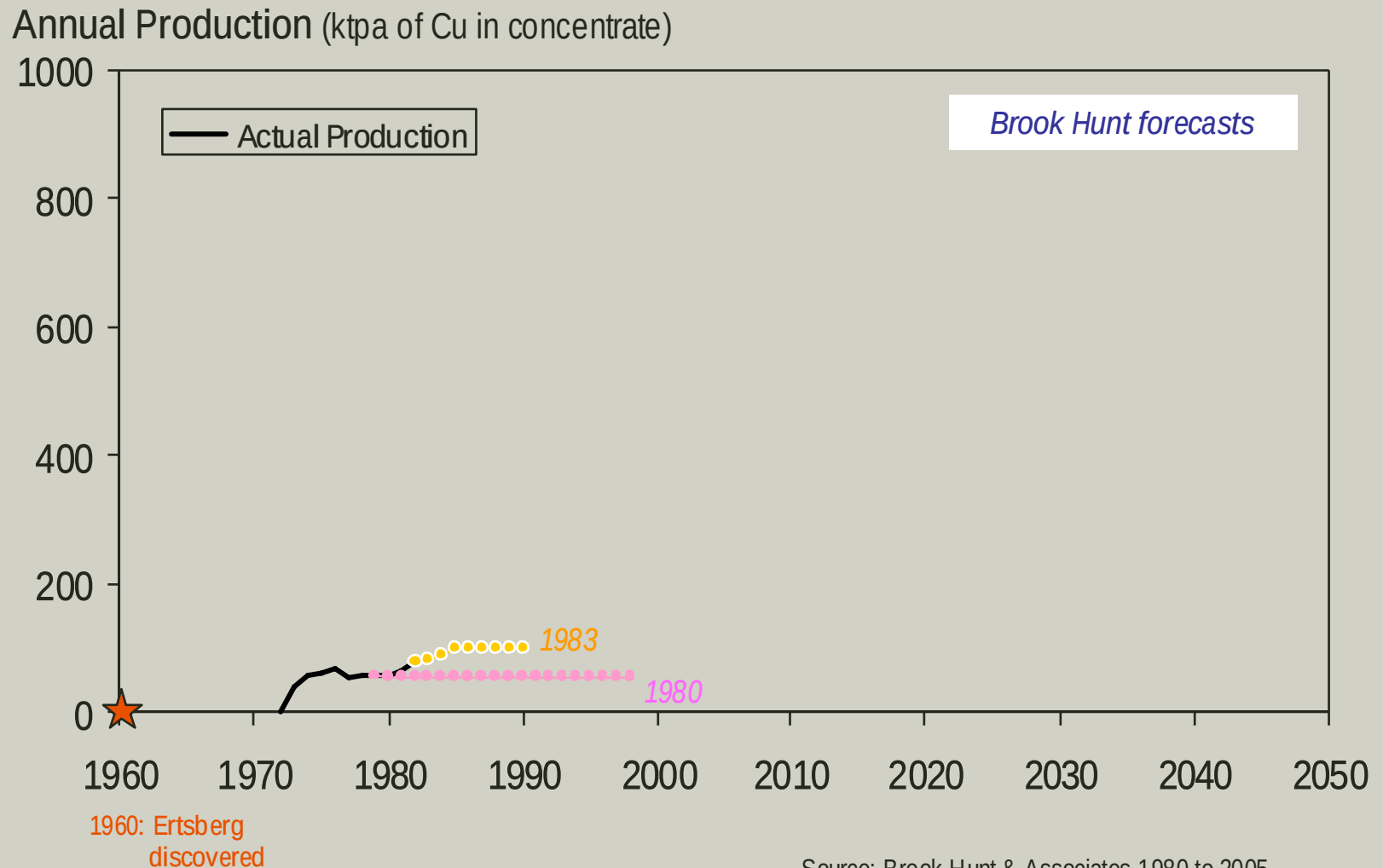


1960: Ertsberg
discovered

Source: Brook Hunt & Associates 1980 to 2005

Copper production from Grasberg Camp

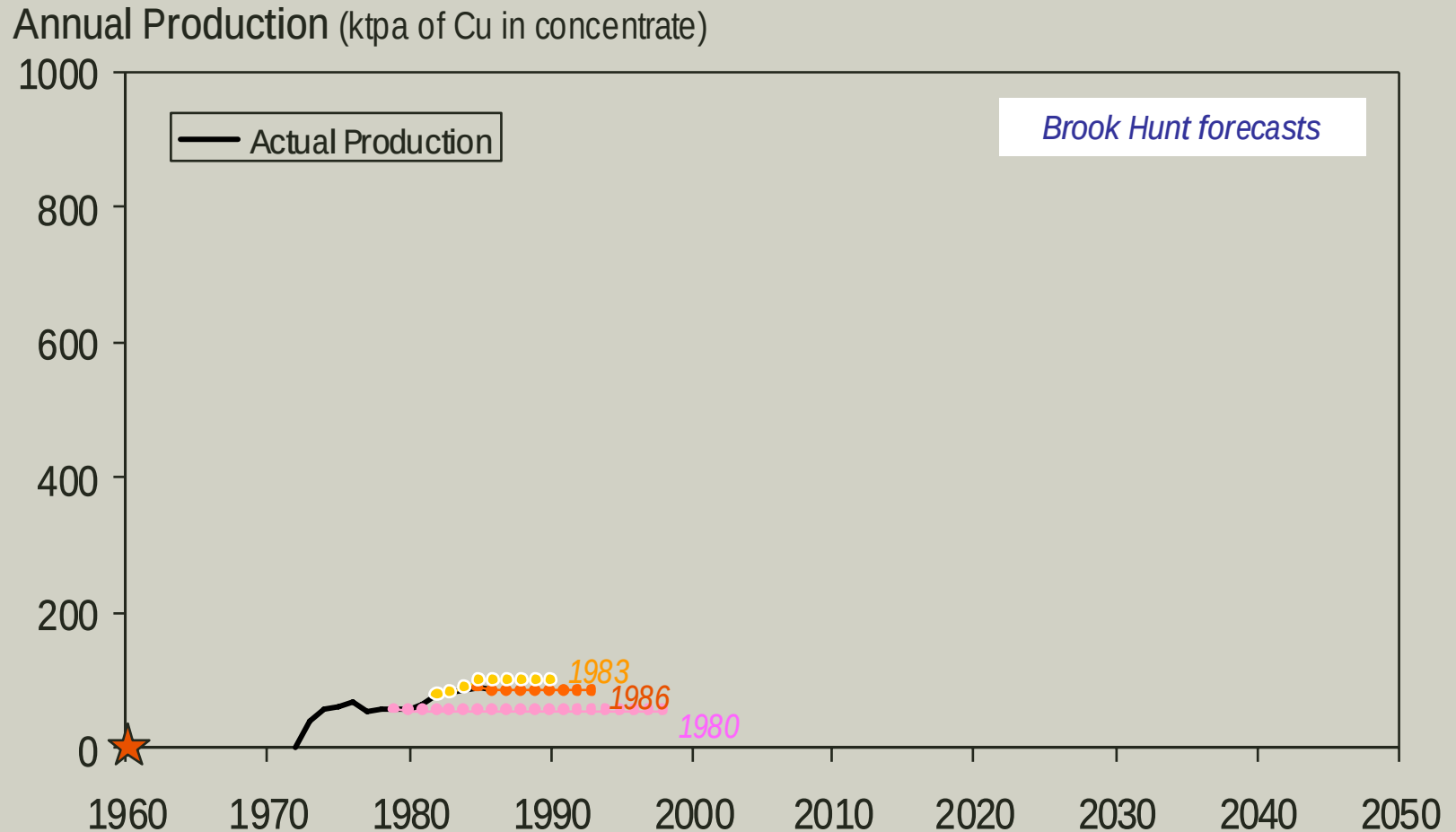
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Source: Brook Hunt & Associates 1980 to 2005

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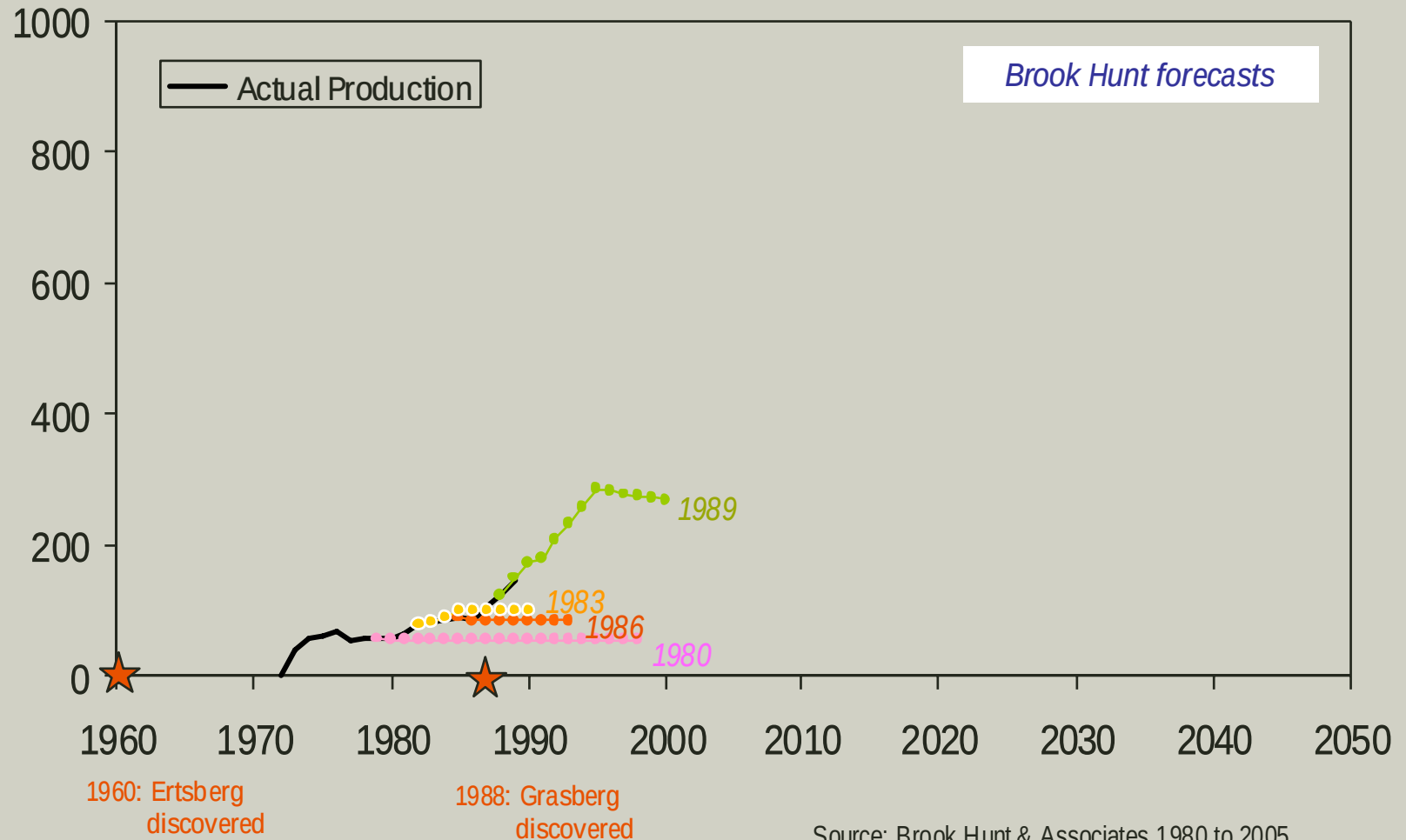
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Annual Production (ktpa of Cu in concentrate)

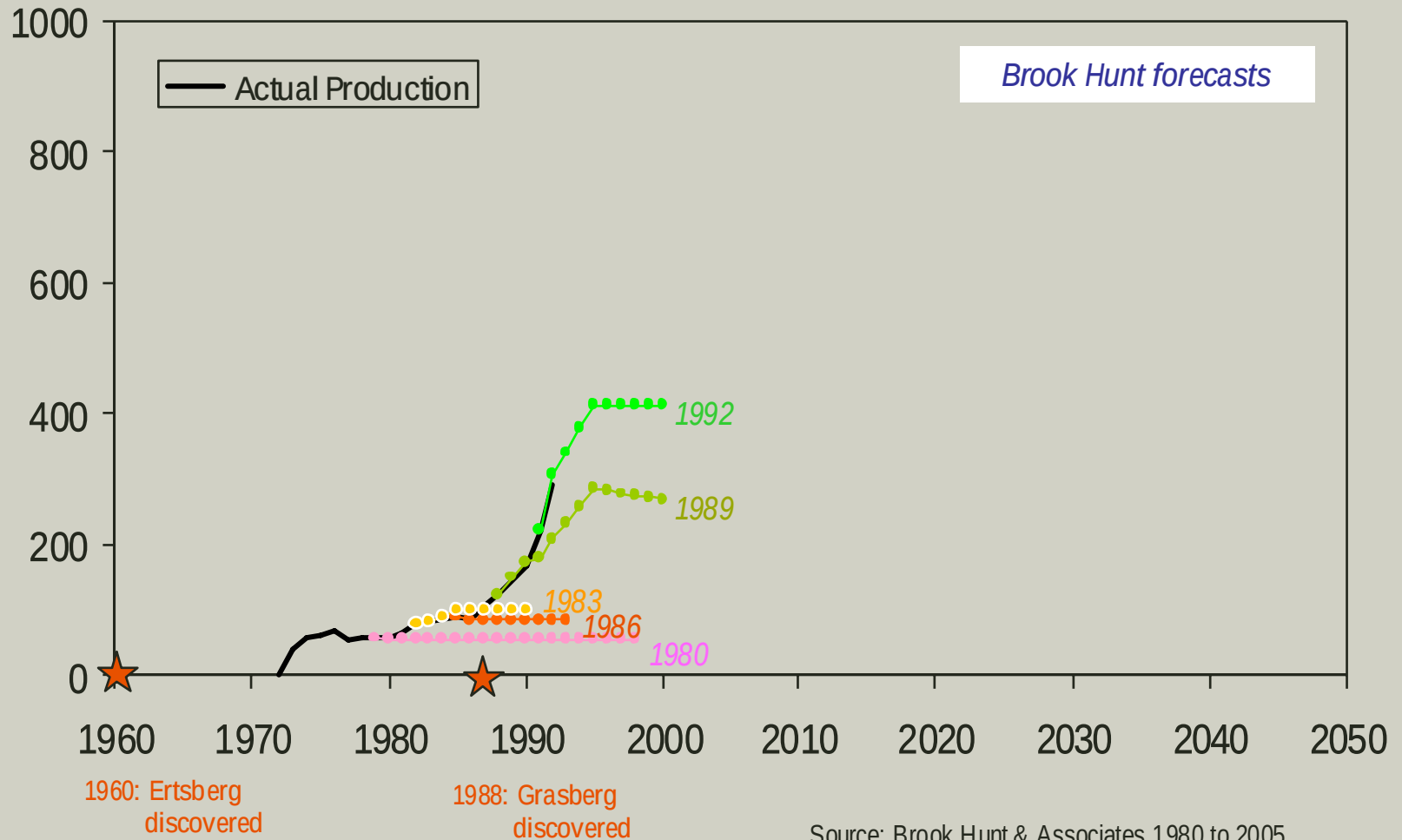


Source: Brook Hunt & Associates 1980 to 2005

Copper production from Grasberg Camp

Actual versus forecast

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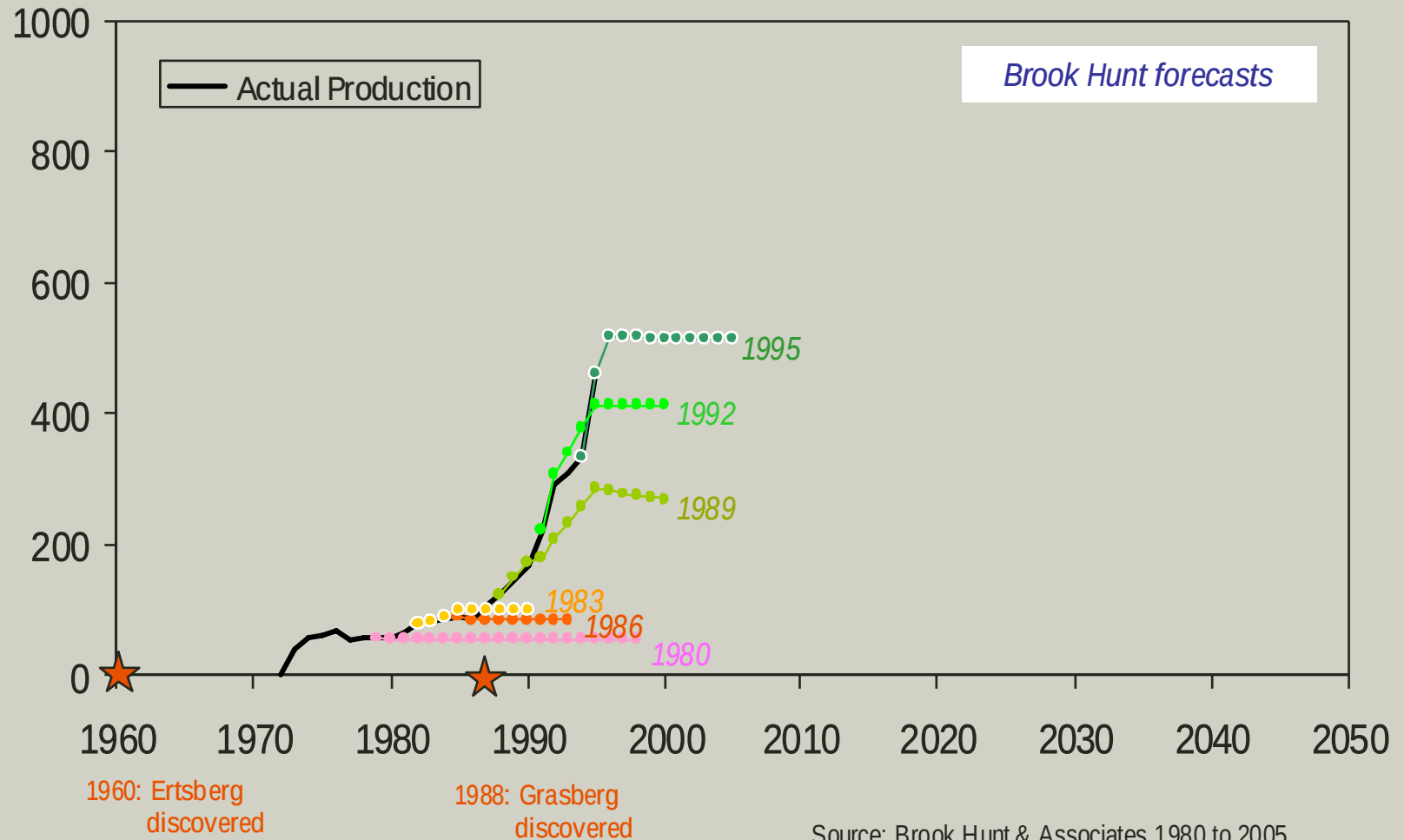


Source: Brook Hunt & Associates 1980 to 2005

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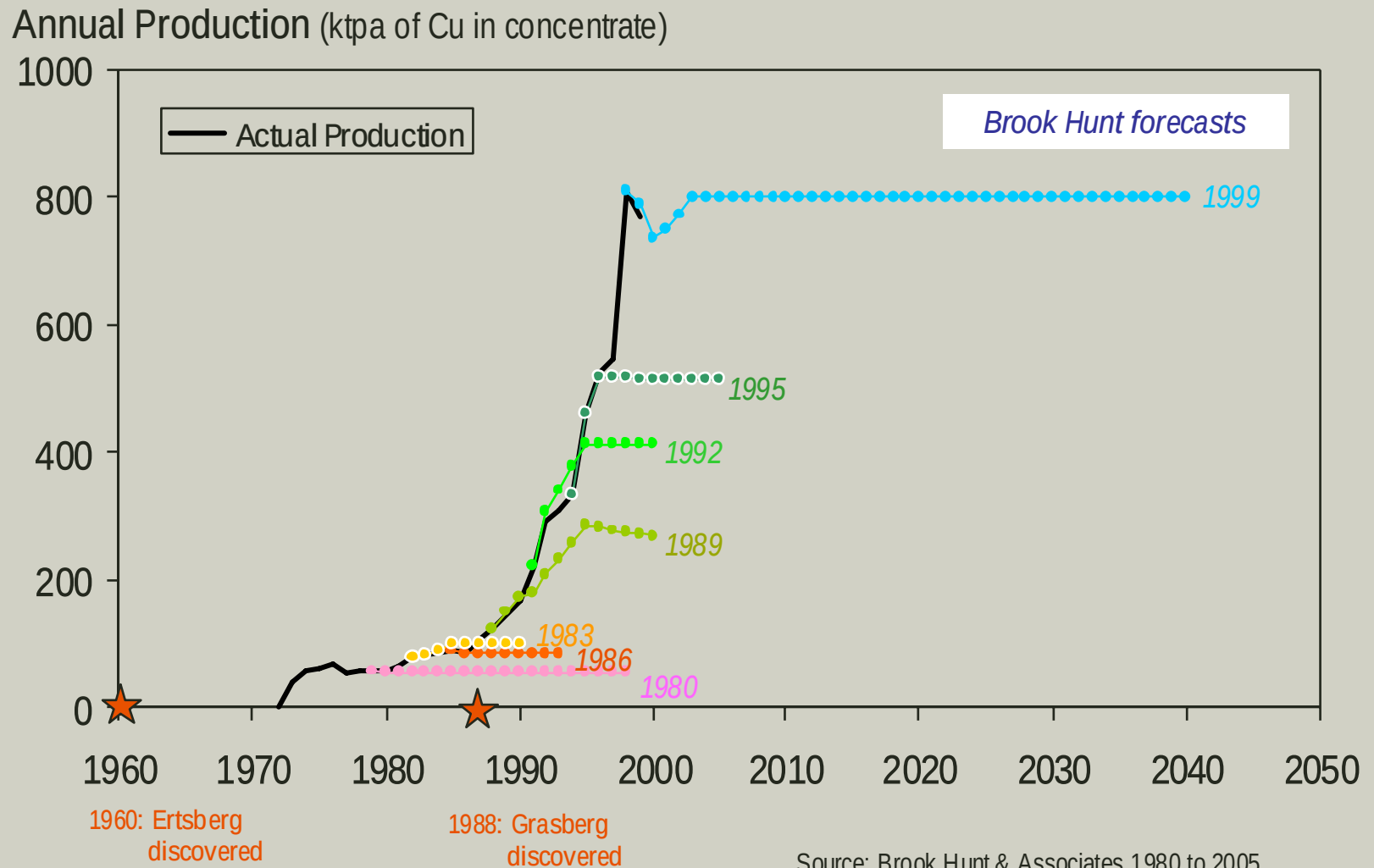
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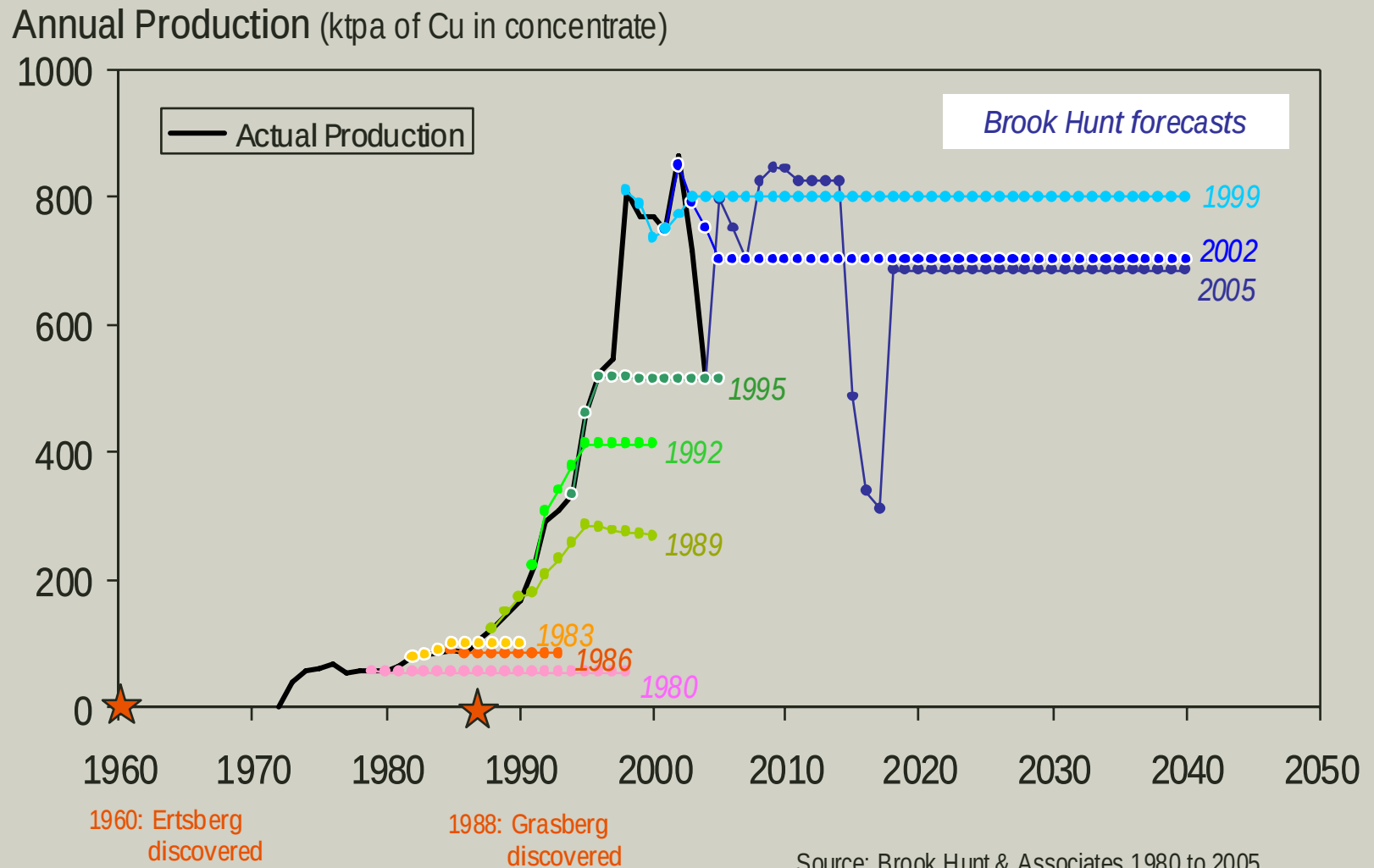
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Source: Brook Hunt & Associates 1980 to 2005

Copper production from Grasberg Camp

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The Four Key Aspects of Exploration Value Creation

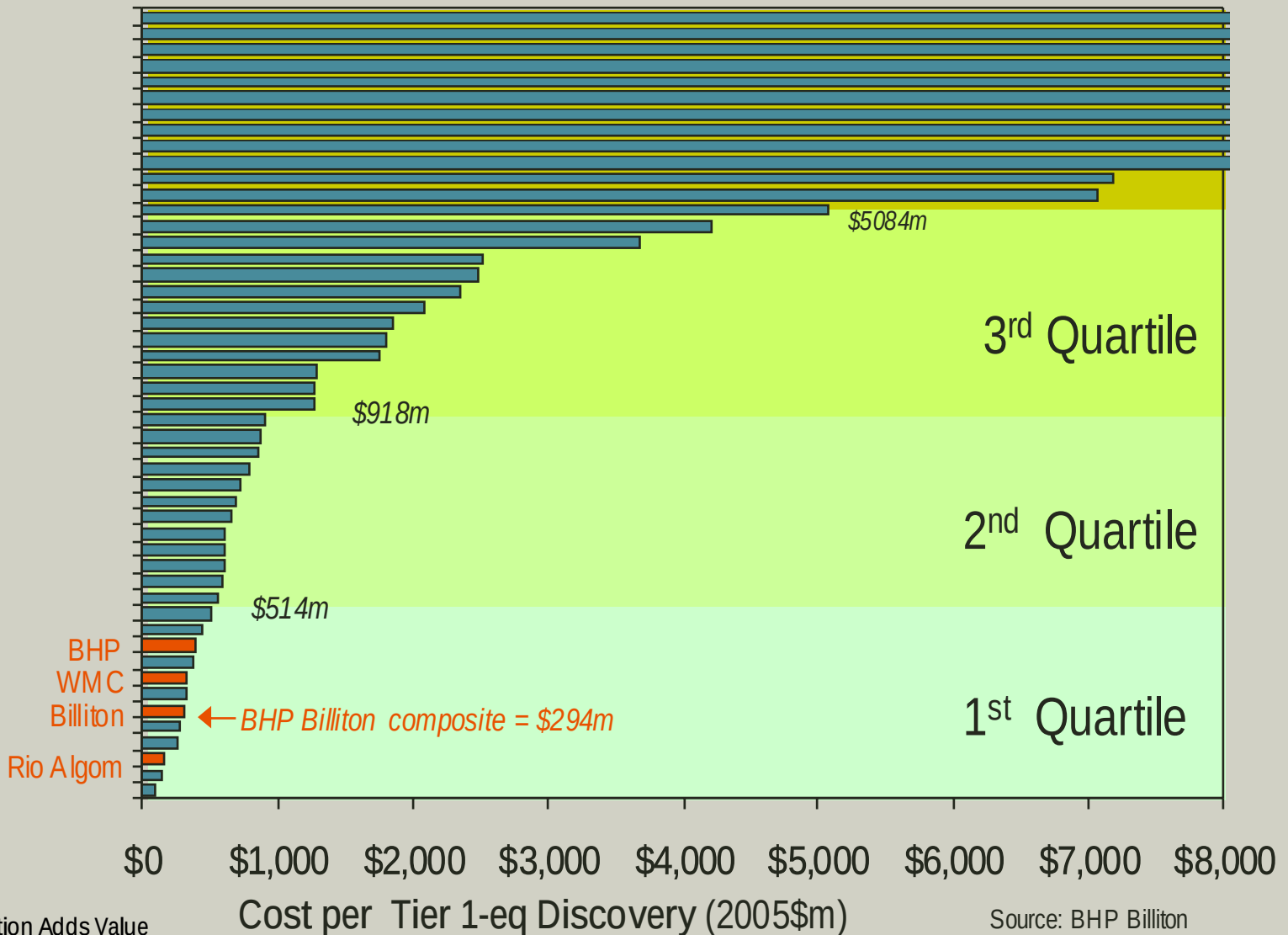
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Analysing Industry Discovery Performance

- Period analysed: 1992-2004
- All commodities
- Only includes companies with >US \$100 Million expenditure over that period
- Performance evaluated in terms of cost per World-Class Equivalent discoveries
- “World Class” equals “Tier 1” in BHP Billiton jargon
 - Tier 1 = > \$250 M NPV; profitable throughout entire cycle
 - Tier 2 = \$50 - \$250 M NPV; profitable throughout part of cycle
 - Tier 3 = < \$50M NPV; only profitable at peak of cycle
- A Tier 1 = 4 Tier 2 = 22 Tier 3
 - Ratios based on actual discovery frequency

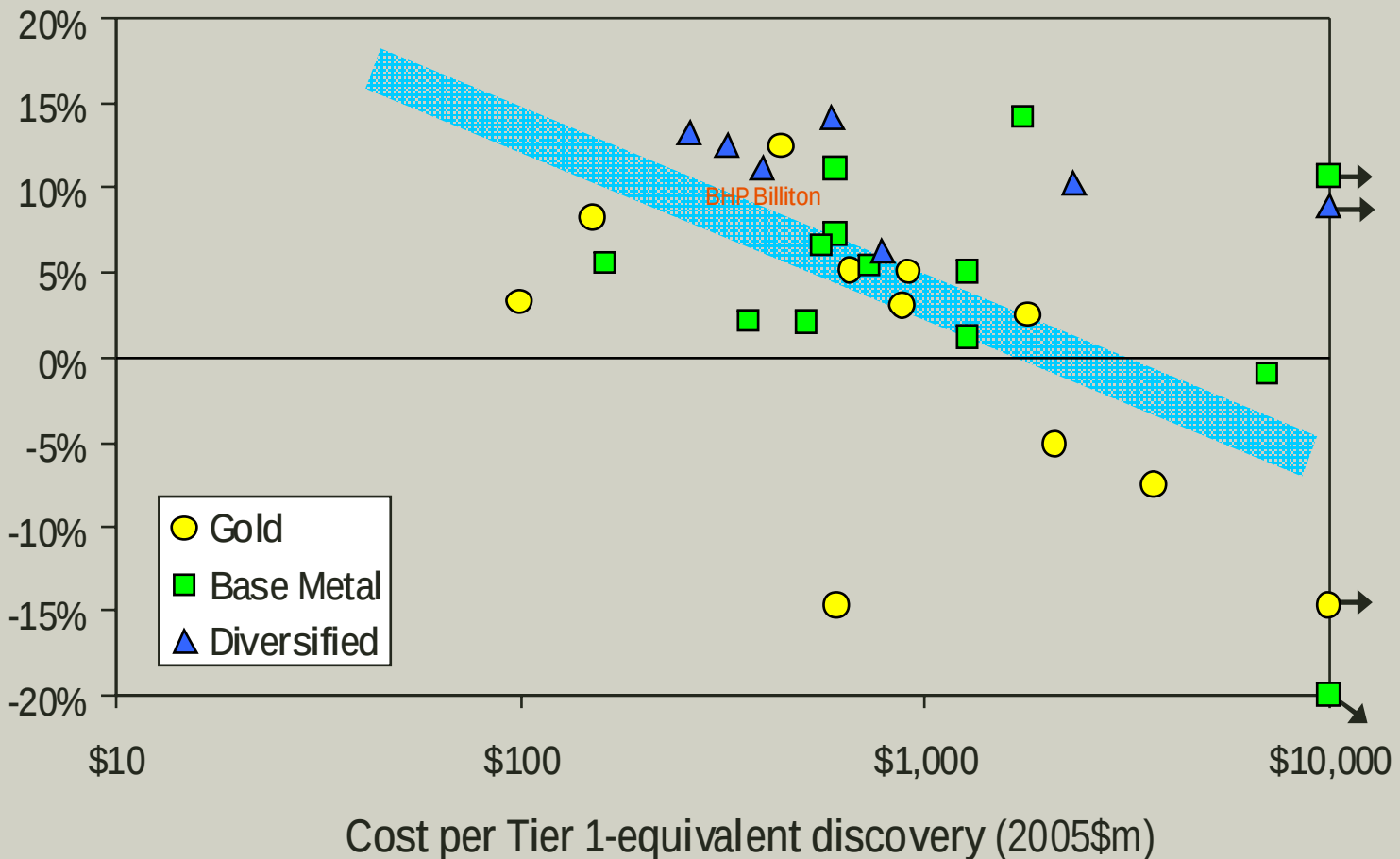
Exploration performance of major companies

Cost per Tier 1-equivalent discovery : 1992-2004



Shareholder return versus discovery performance : 1992-2004

Total shareholder return (Compound Annual Growth)



The Four Key Aspects of Exploration Value Creation

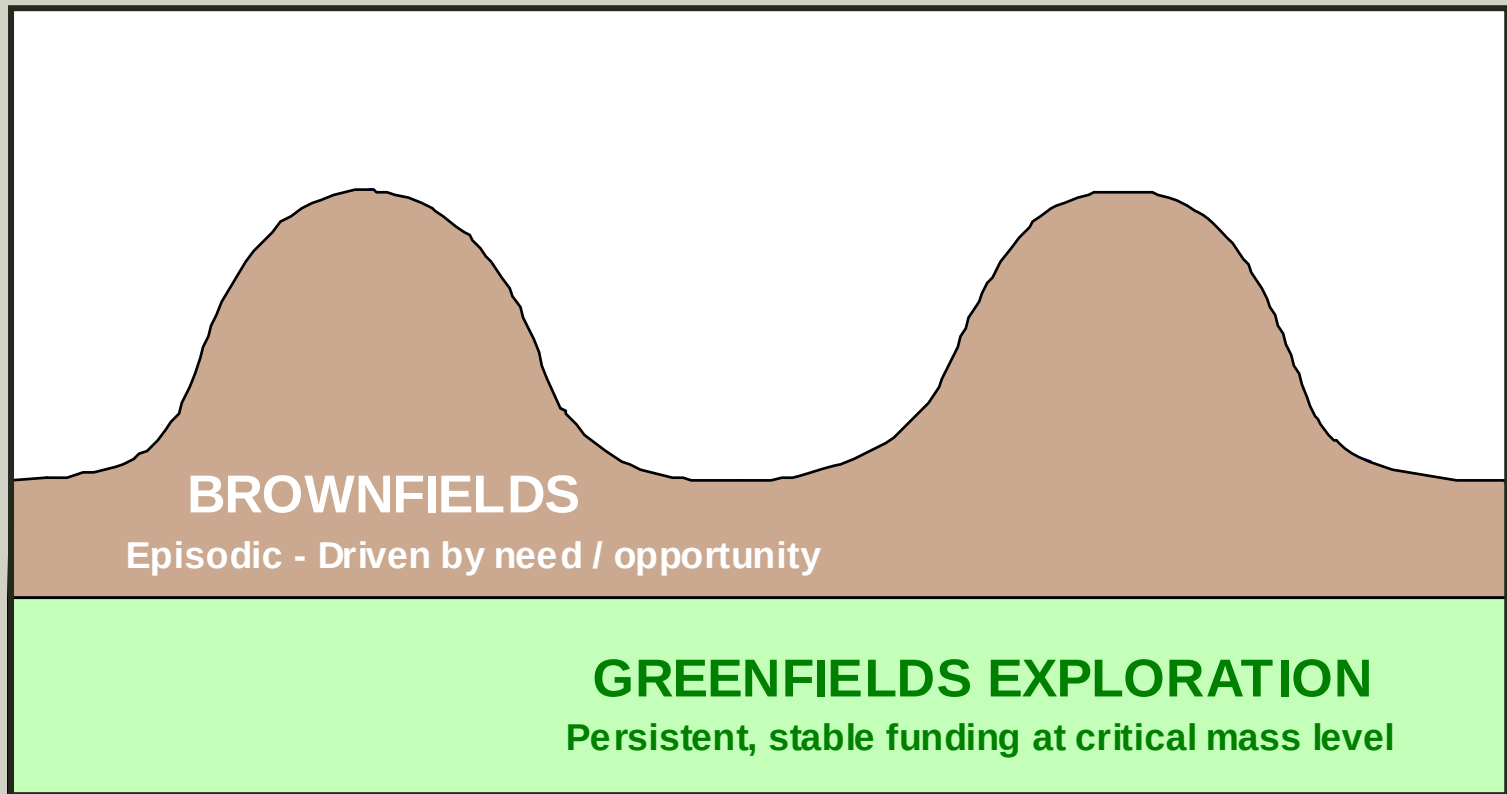
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BHP Billiton Brownfields Programs with Mineral Exploration Group Management or Advisory role



Stable Greenfields vs Cyclic Brownfields Funding

\$



TIME 

Conclusions

- Exploration does have a **very important role** to play in adding value to a very large mining company such as BHP Billiton
- Need to **focus on the long-term embedded option value** of world-class deposits
- Must strive for **top quartile performance**
- The Exploration function must be **well integrated** into broader process of Integrated Business Development and Customer Sector Group brownfields exploration activities

THANK YOU & GOOD LUCK !

The World Needs You !