



# Capital Markets Day

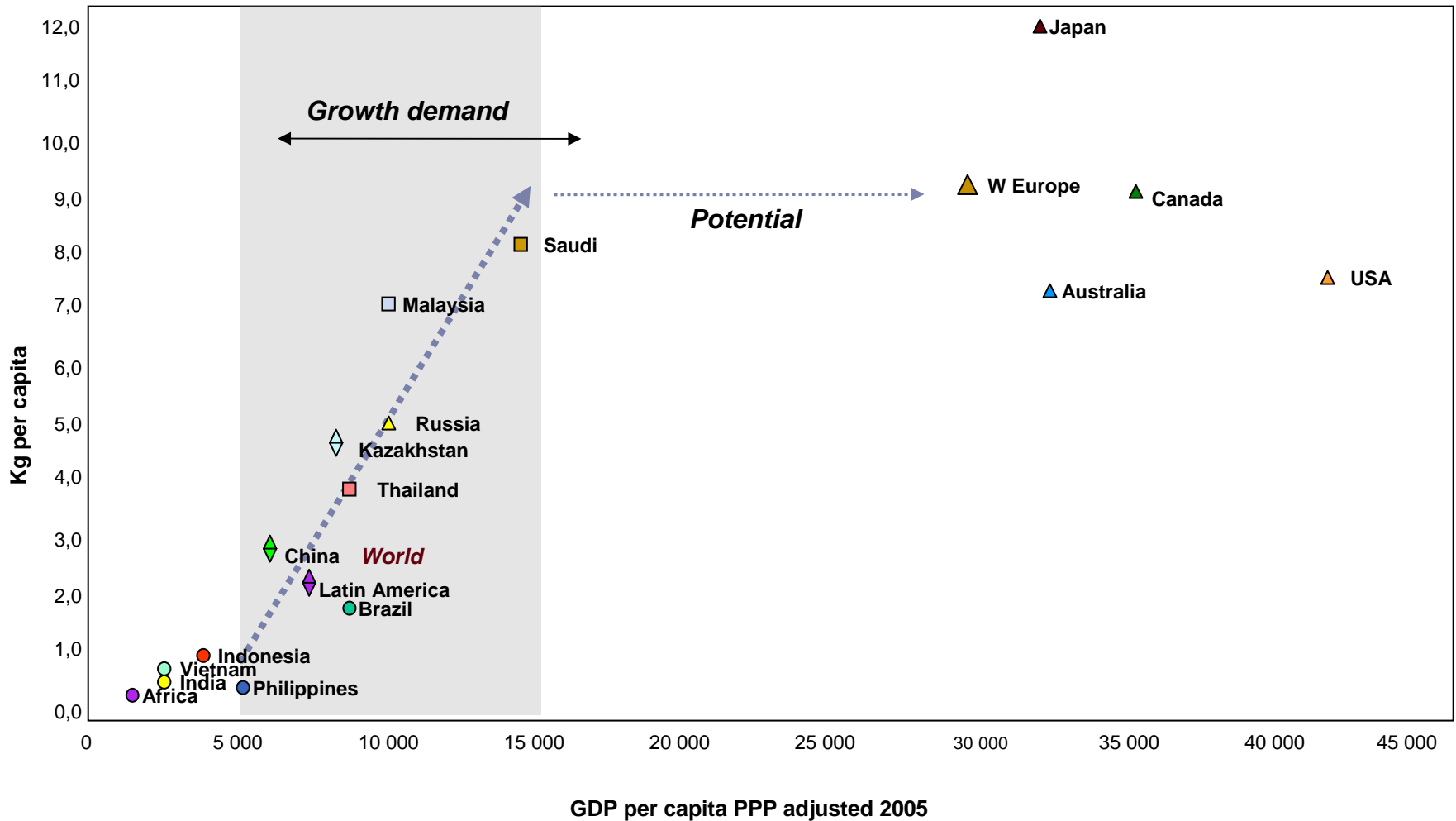
November 2008

## Industry trends

**Lennart Evrell**

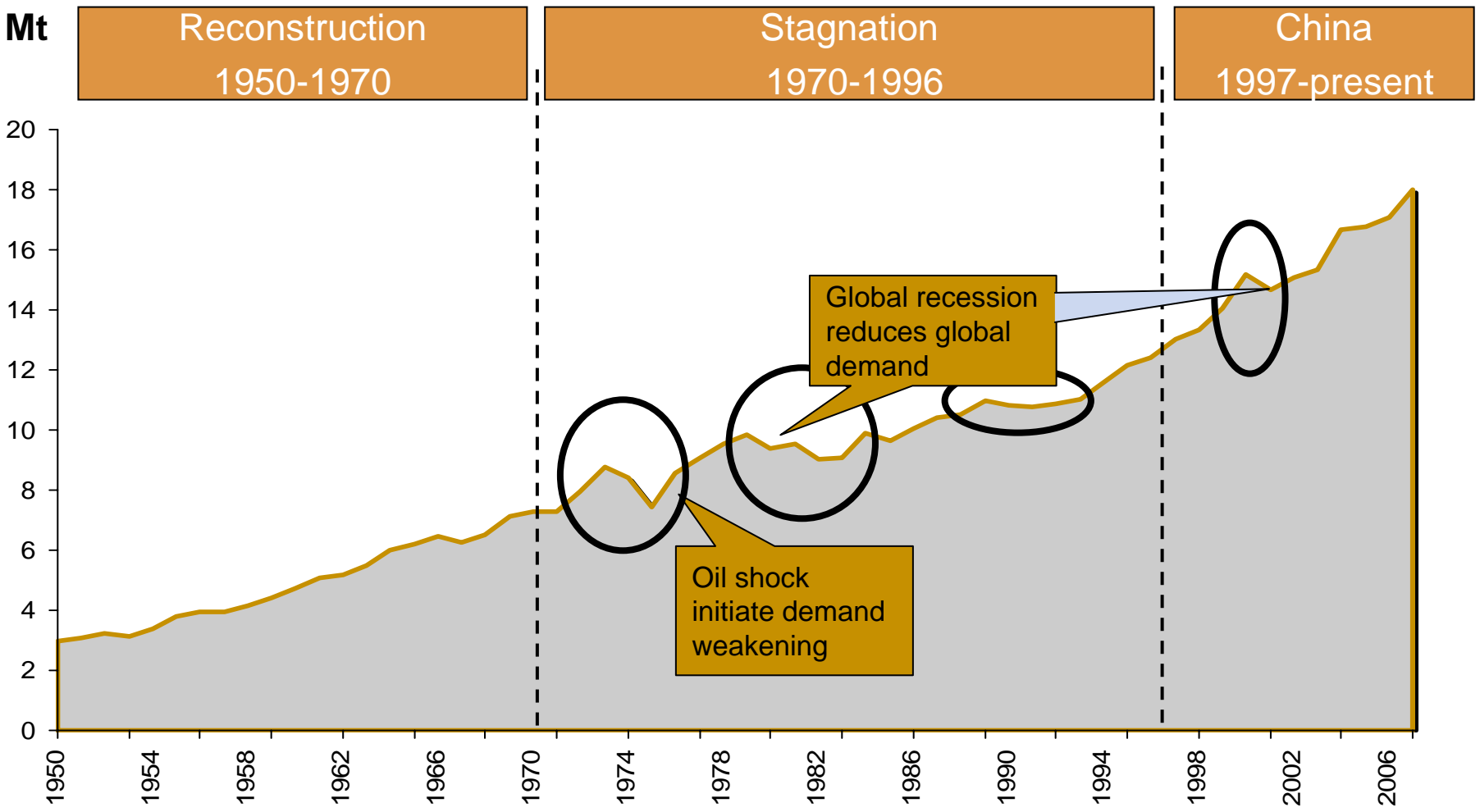
President & CEO

# Fundamental demand for base metals



# HISTORICALLY RECESSIONS HAVE IMPACTED GLOBAL METAL DEMAND, BUT ONLY MODERATELY

Global refined Cu demand  
1950-2007

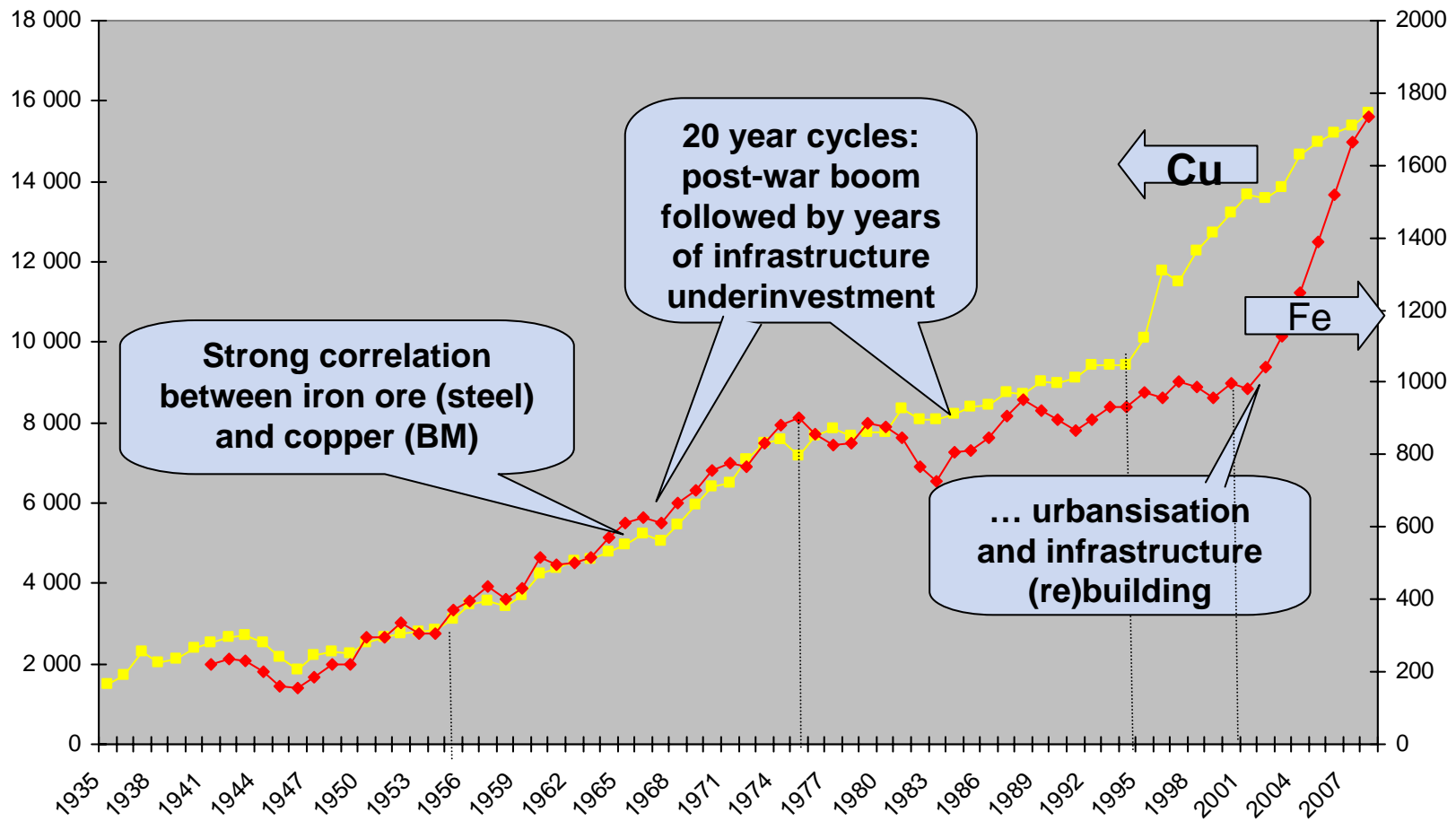


Source: WBMS; McKinsey analysis



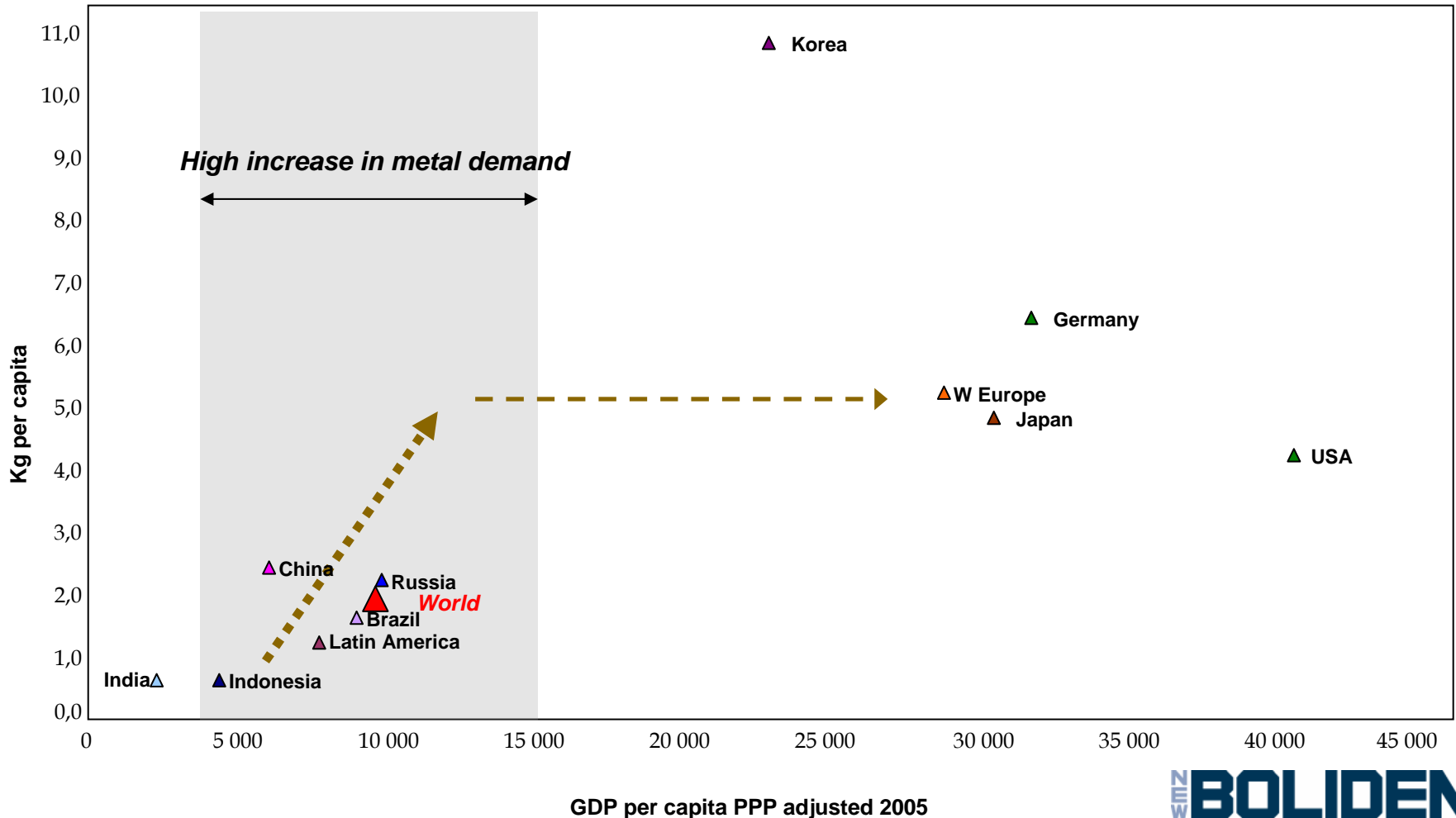
# AND PRIMARY DEMAND IS OFTEN LESS AFFECTED..

Thousand tonnes of primary copper consumption (LHS)  
Million tonnes of iron ore consumption (RHS)



# Potential for continued growth of zinc metal demand

2006 Zinc consumption vs. GDP per capita



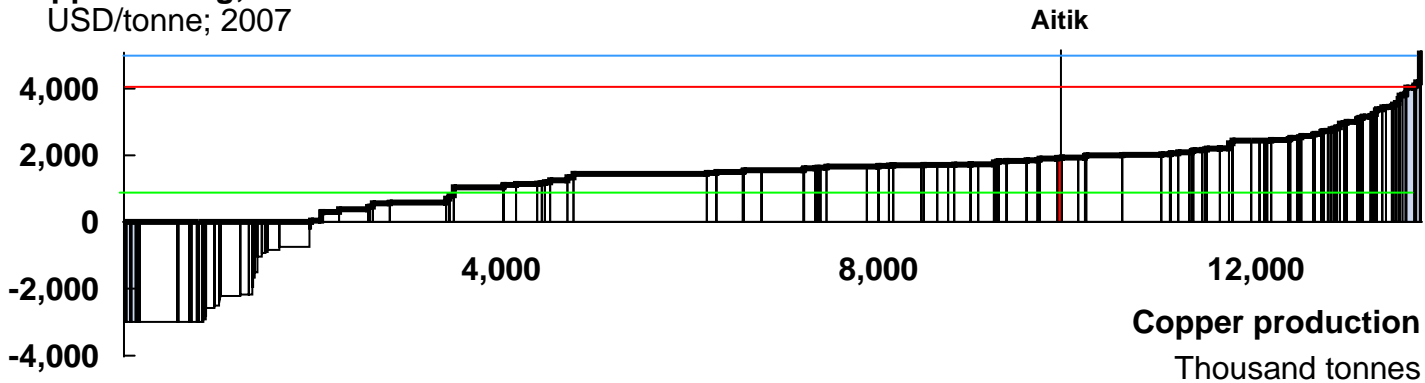
# The USD/SEK exchange rate 2001-2008

USD/SEK-Spot



# A cash cost curve is benchmarking some 90% of the worlds mines (Normal C1)

Copper mining; Normal C1 cash costs  
USD/tonne; 2007



Source chart: Brook Hunt 2007

# Cash cost at Boliden's zinc mines (Normal C1)

## Cashcost 1. Boliden mines 2008

	<b>Boliden</b>	<b>Garpen</b>	<b>Tara</b>
TC	30	30	29
Production Cost	160	58	53
Credits	-172	-78	-9
<b>C1</b>	<b>18</b>	<b>10</b>	<b>73</b>

- Little correlation between production cost and cash cost
- TC and credits are very important
- Volatile with high credits

LME Main metal  
-C1  

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EBITDA Ex overhead



# Cash cost definitions

- **Normal costing**

- Main metal >60% of total metal value
- All cost allocated to main metal
- Other metals regarded as by-products and credit to cost
- A mine will have only one cash cost

- **Prorata costing**

- Cost distributed to each metal in relation to value
- A mine will have one cash cost for each metal

- **Composite Costing**

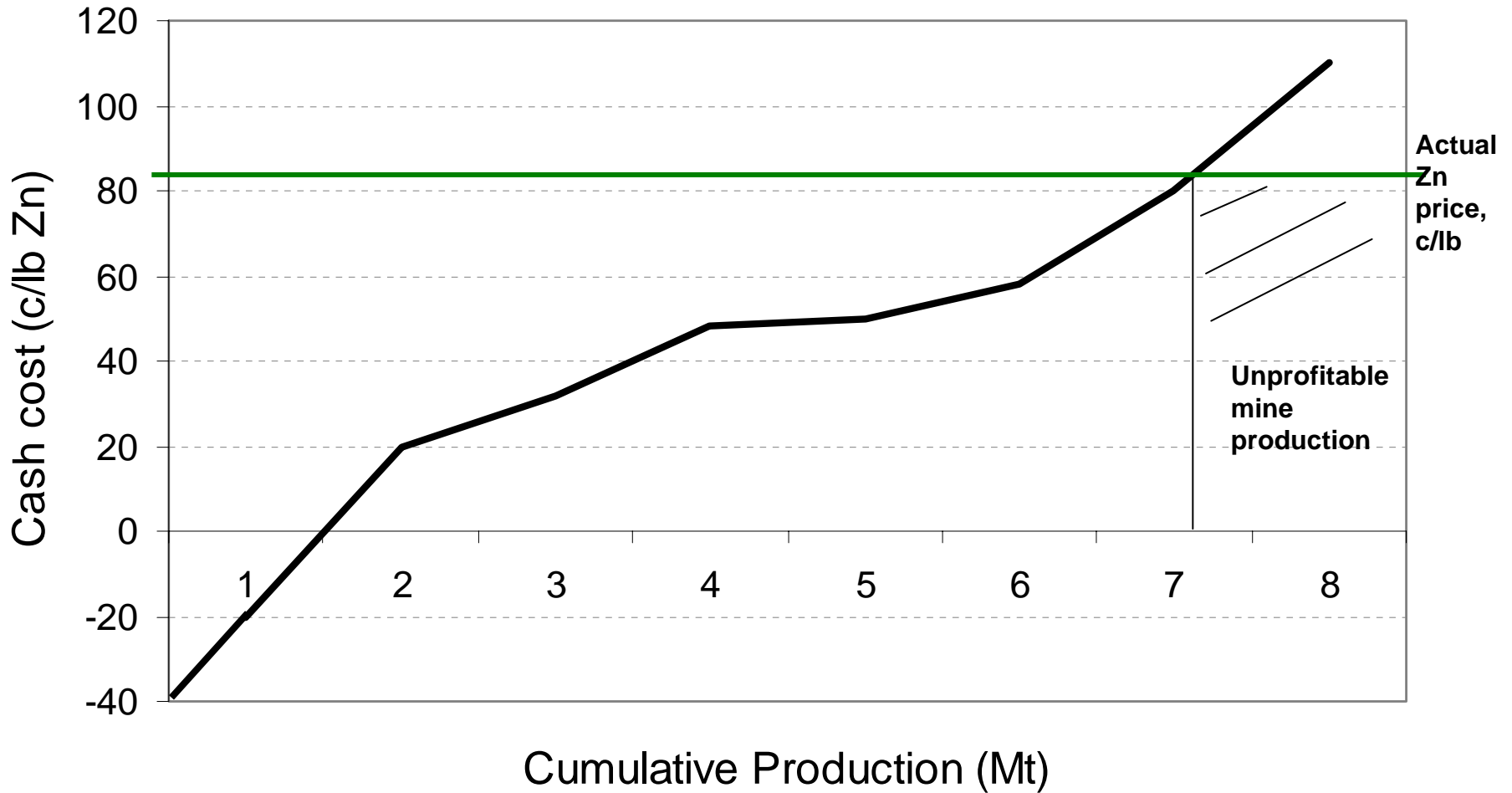
- Combines the two methods
- Mines with a main metal >60% in Normal costing, other Prorata

- **Boliden publishes Normal costing for mines**

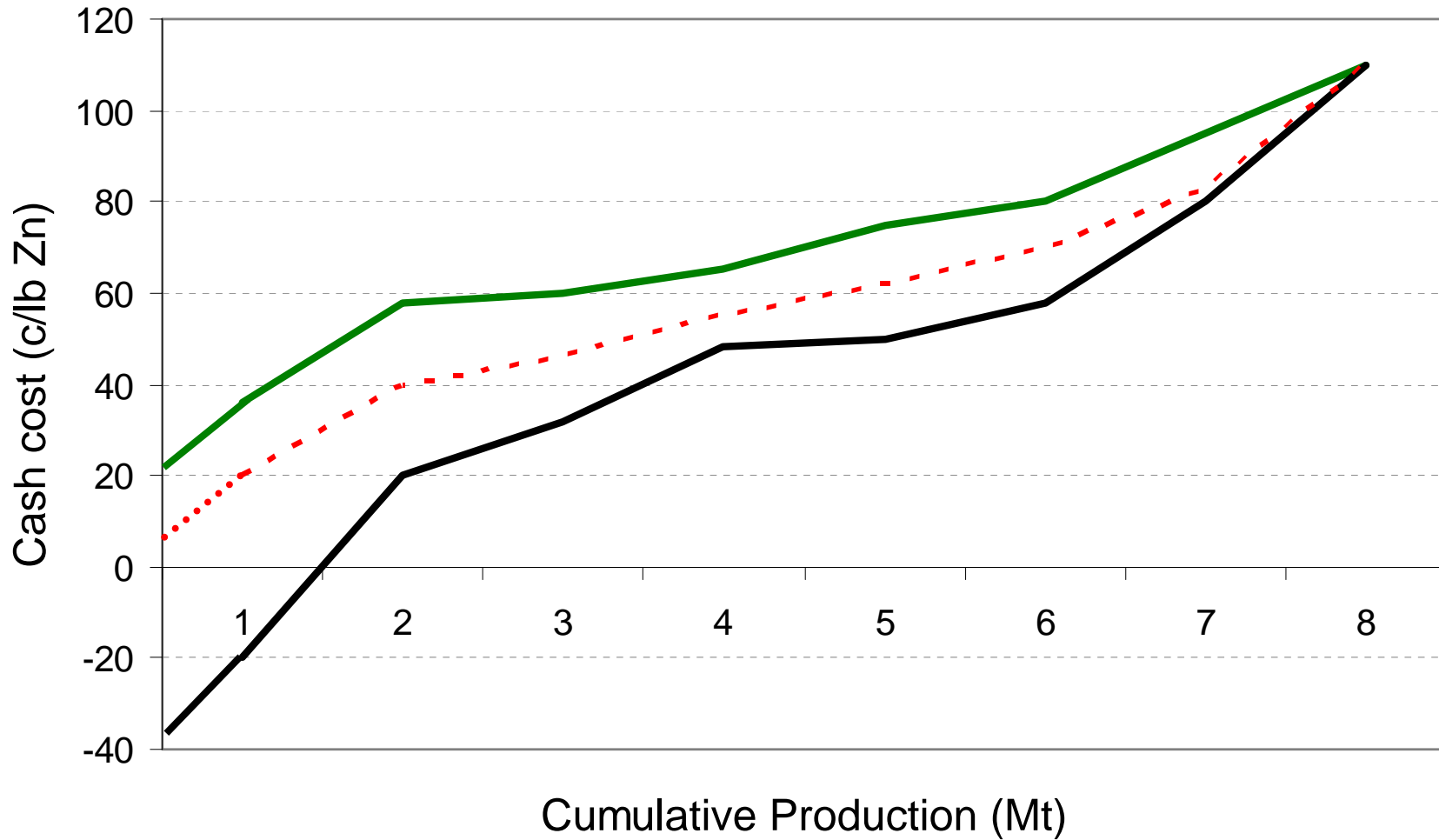
# Cash cost definitions

- **C1**
  - TC (TC/RC)
  - Mining cost
  - Processing (milling and concentrating)
  - Transportation
  - On site administration
  - Marketing
- **C2**
  - C1 plus depreciations
- **C3**
  - C2 plus interest and indirect cost (corporate overhead, exploration...)

# Normal costing (C1)



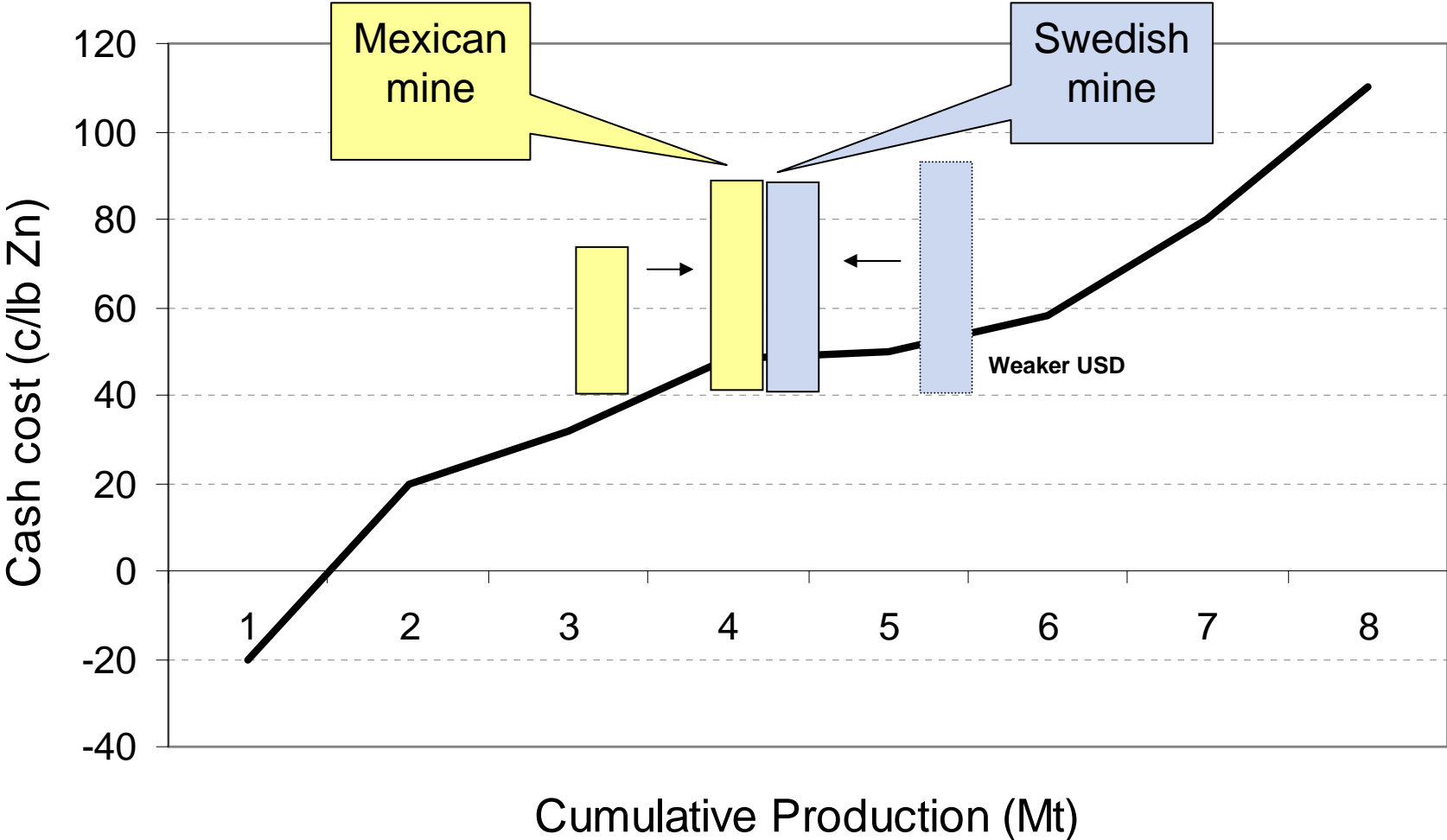
# Pro rata / Composite / Normal costing (C1)



Pro rata costing without by-products credits

# A strong dollar improves Bolidens position

## Normal costing (C1)

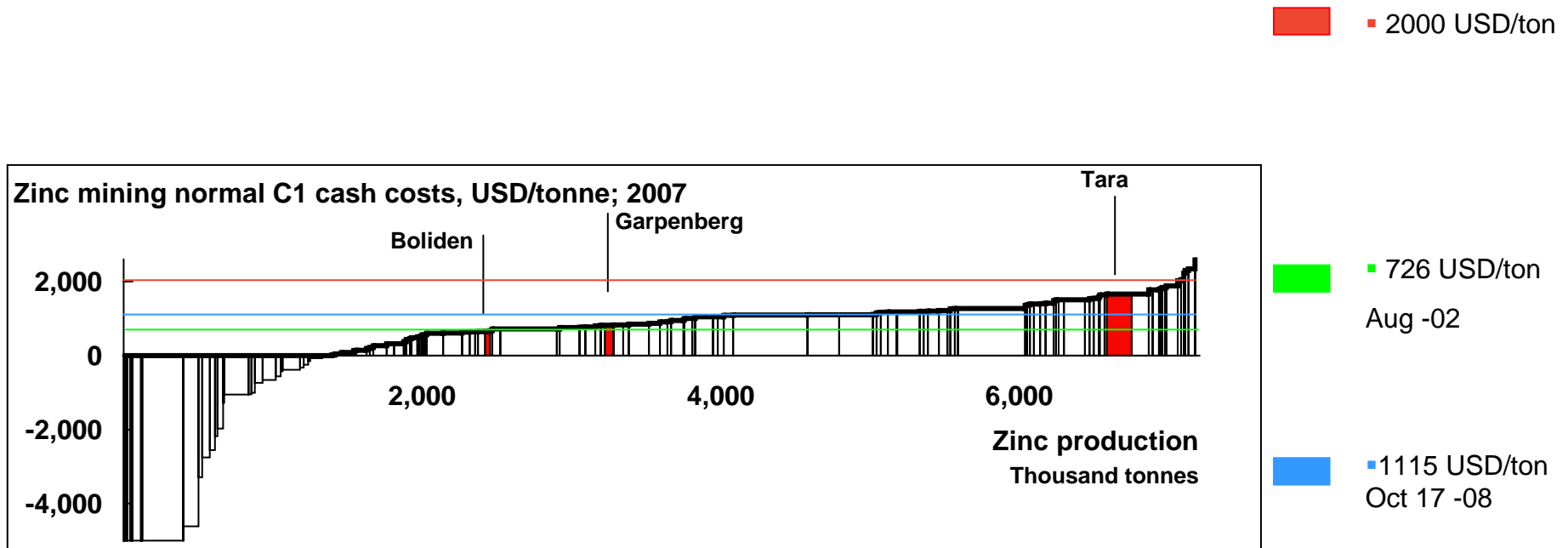




# Industry trends - zinc

# Cash cost Zn mines

50% of the world capacity at negative cash flow at zinc 1150 USD/tonne



# Announced production cutbacks at zinc mines

Zinc mine production changes 2008, except disruptions

Q1-08	Country	Comments	Zinc ktpa capacity	Zinc ktpa cut	B.H. cash cost 2008 e normal costing 2006\$ c/lb
Balmat	USA	Put on care and maintenace	60	60	71.8
Blaiken	Sweden	Closed	23	23	77.6
Zyryanovsk	Kazakhstan	Closed	20	20	
<b>Q2-08</b>					
Duddar	Palistan	Delayed start up now late 2008			
Broken Hill	Australia	Production downsized in response to lower prices	91	55	57.5
Endeavour	Australia	High grading but unchanged production			64.9
Hellyer	Australia	Taiullings recovery put on care and maintenace	30	30	87.7
Pillara (Lennard Shelf)	Australia	Put on care and maintenace	70	70	61.5
Monte Cristo	Brazil	Put on care and maintenace	12	12	
El Brocal	Peru	Put on care and maintenace	16	16	
Galmoy	Eire	Closure planned for 2011	70	20	73.9 3 year shutdown
Aljustrel	Portugal	Production plan revised down 30%		14	
<b>Q3-08</b>					
Rau-Rapu	Philippines	Production halted, Chapter 11 protection		14	
Isayacruz	Peru	Closure 2011, one year earlier			53.8
Rosaura	Peru	Closure 2009, one year earlier			
Golden Grove	Australia	Reduced production		15	36.2
<b>Q4-08</b>					
Tennessee zinc mines	USA	Put on care and maintenace	57	57	83.6
Caribou	Canada	Put on care and maintenace			50.8
Aljustrel	USA				
<b>Project deffered</b>					
Perkoa	Burkina Faso				72.8
Black Angel	Greenland				97.2
Vazante	Brazil	Approved expansion has been cancelled	50		36.9
<b>Smelter cutbacks</b>					
Horsehead Corp	USA	closes one of 6 zinc furnaces			

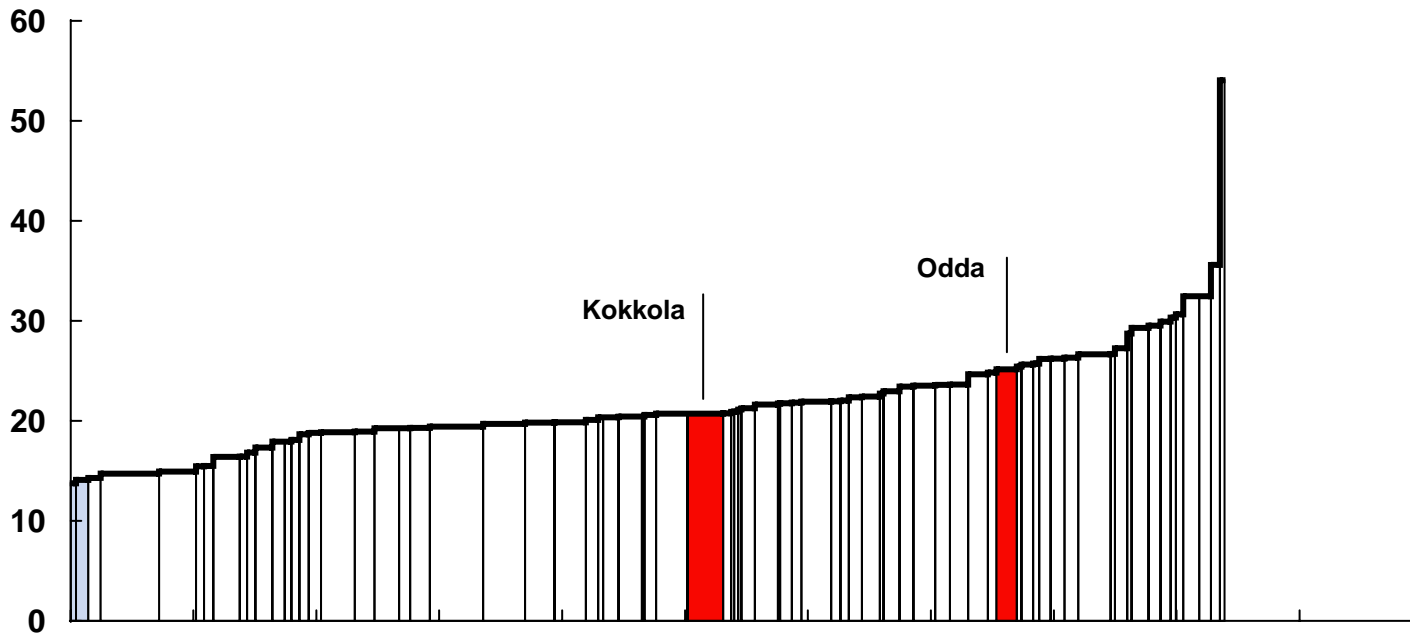


# Mine closures / C&M announcements

- 4% of mine capacity announced to be closed
- 8% of capacity including probable closures

# Cash conversion cost for zinc smelters

Cash conversion costs in zinc smelting  
2007; US\$/lb



## Low prices in past cycles

USD/ton	Zn
16-okt	1233
90 %ile	1540
75%ile	1320
50%ile	1144

Similar cycle	Early '00s
Lowest %ile touched	33%
Current cost at %ile	715
%ile average worst year	83%
Current cost at %ile	1430

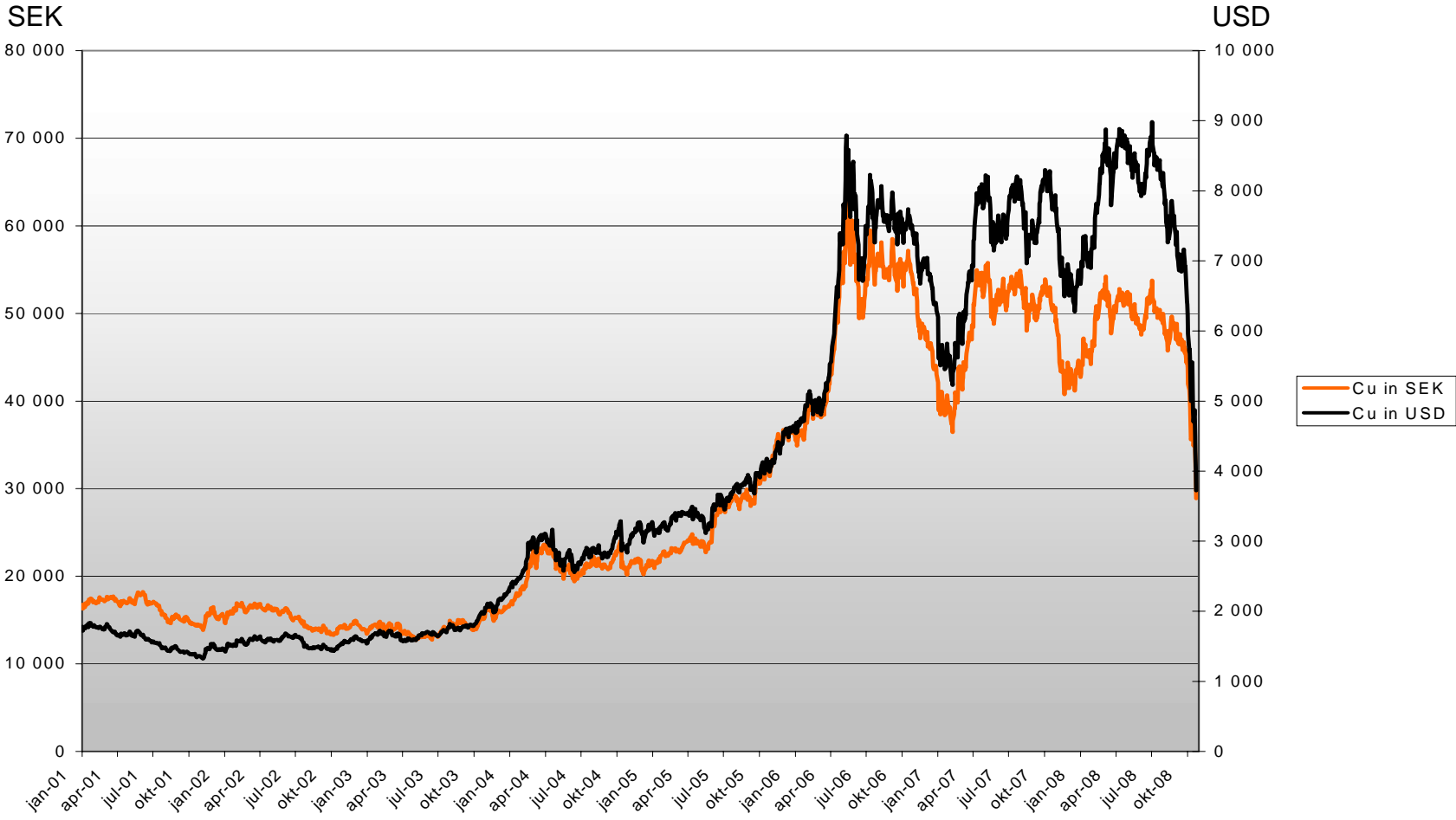
Worst downcycle period	Early '90s
Lowest %ile touched	33%
Current cost at %ile	715
%ile average worst year	62%
Current cost at %ile	1210

Source MacquarieResearch, Brook Hunt, Oct 2008



## Industry trends - copper

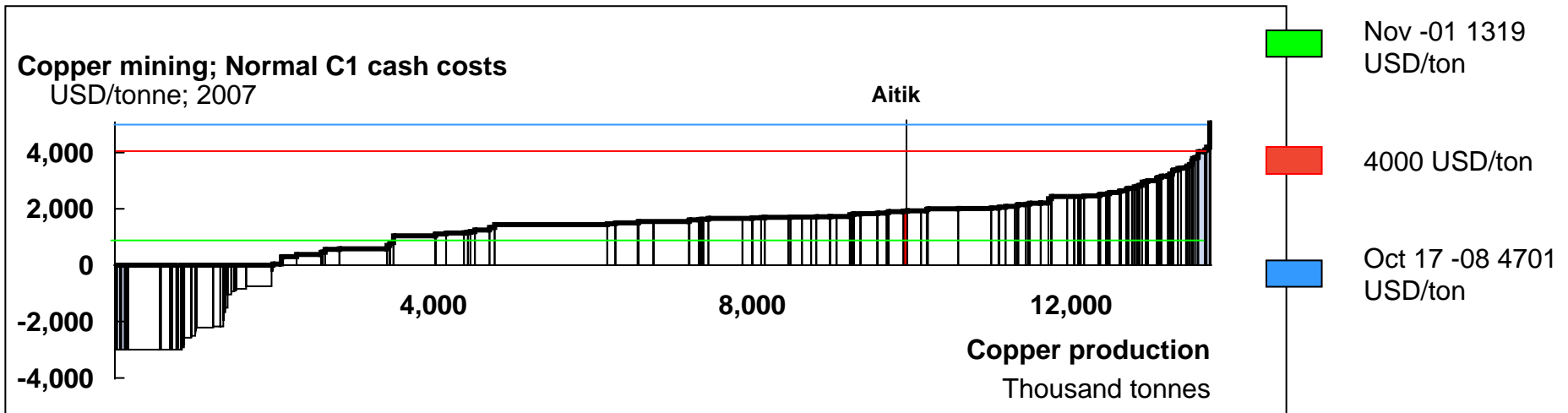
# Copper prices in USD and SEK



# Copper cash cost (Normal C1) 2008

Brook Hunt **22 okt 2008**

30% higher cash cost on update 22 oct 2008

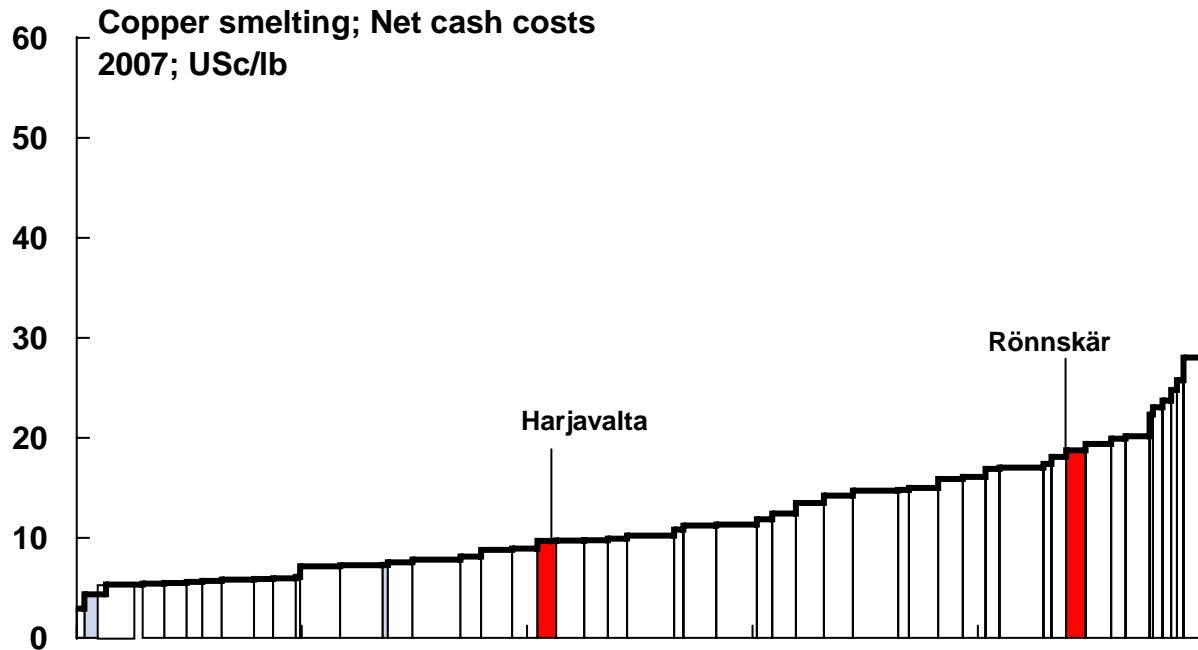


# Cost development copper mines 2002-2007

	2002	2003	2004	2005	2006	2007e	2007/2002
<b>Minesite costs, Usc/lb</b>	39	43	52	61	73	85	118%
<b>Freihgt &amp; Marketing</b>	3	3	4	4	5	5	95%
<b>Custom Sales - Long term</b>	17	16	13	27	41	20	18%
<b>Smelting &amp; Refining</b>	14	14	15	22	29	20	43%
<b>Gold credits</b>	-8	-9	-8	-12	-13	-14	87%
<b>Molybdenum credits</b>	-2	-3	-11	-24	-18	-24	1386%
<b>By-product credits</b>	-11	-14	-21	-40	-36	-44	312%
<b>Cash cost 1</b>	45	46	49	48	71	66	47%
<b>Sustaining capital</b>	7	7	7	10	12	15	110%

- **C1 has increased by 50%, credits have strong contributions**
- **Mine site cost more than doubled 2002-2007**

# Copper smelters, net cash cost



Source chart: Brook Hunt

- Copper smelters have high flexibility and can process many materials
- Cash cost is difficult to use to evaluate copper smelters
- Boliden processes many materials including E-scrap and nickel



## Low prices in past cycles















USD/ton	Cu
16-okt	4680
90 %ile	3850
75%ile	2970
50%ile	2310

Similar cycle	Early '00s
Lowest %ile touched	83%
Current cost at %ile	3520
%ile average worst year	90%
Current cost at %ile	3850

Worst downcycle period	Early '80s
Lowest %ile touched	75%
Current cost at %ile	2970
%ile average worst year	82%
Current cost at %ile	3410

Source MacquarieResearch, Brook Hunt, Oct 2008

# Strategic rationale from deals by miners/smelters

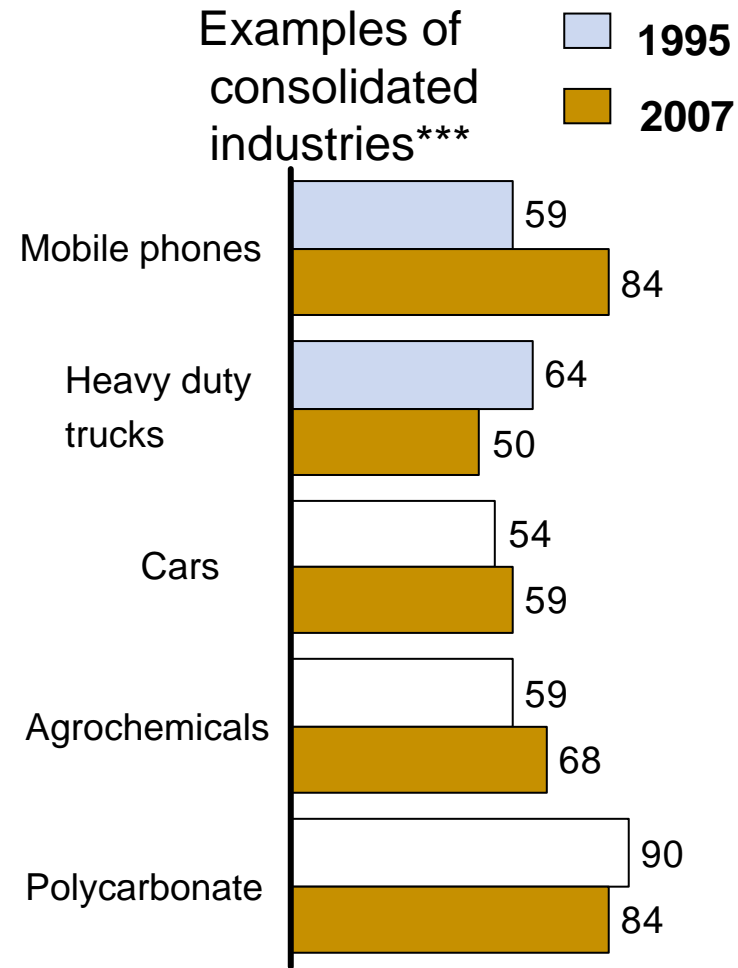
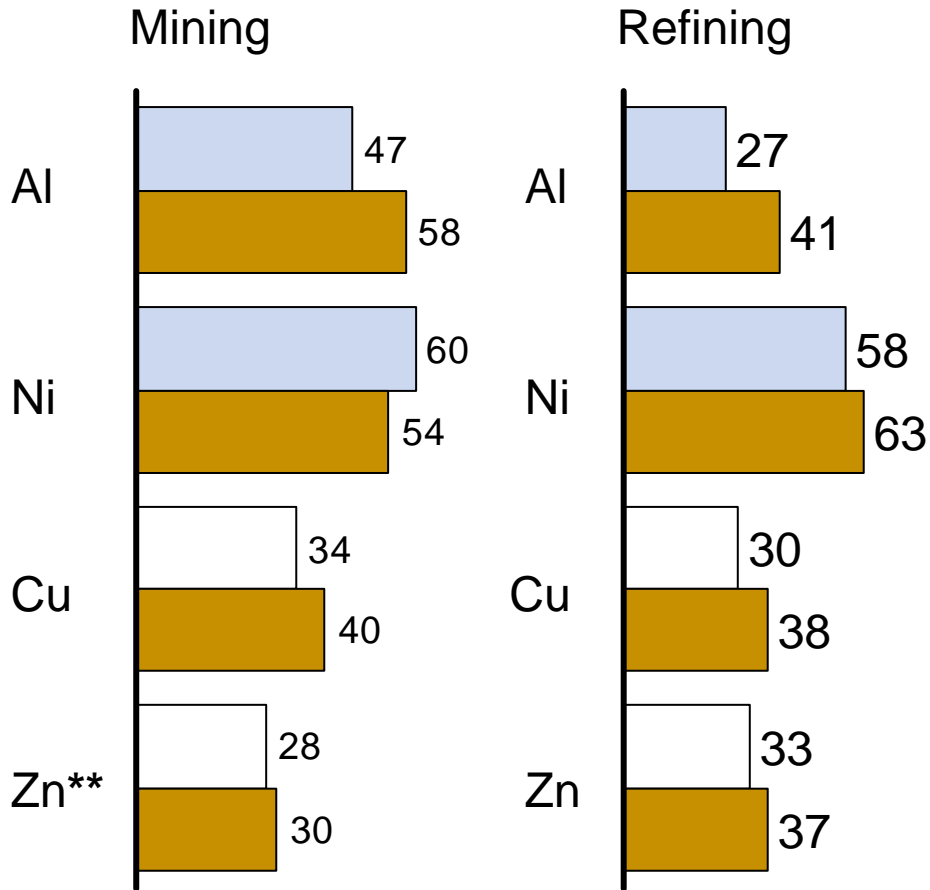
	Description	Smelting/ mining	Example
Fast-track growth	<ul style="list-style-type: none"> <li>With constraints on organic growth, acquisition provides faster growth</li> </ul>	Miners	<ul style="list-style-type: none"> <li>Lundin – Tenke</li> </ul> 
Secure resources	<ul style="list-style-type: none"> <li>Secure resources to supply mid stream assets (scarce market)</li> </ul>	Smelters	<ul style="list-style-type: none"> <li>Freeport – Phelps Dodge</li> <li>Chinalco-Rio Tinto</li> </ul>     
Consolidation	<ul style="list-style-type: none"> <li>Consolidation to improve pricing and purchasing power in value chain</li> </ul>	Smelters	<ul style="list-style-type: none"> <li>Nyrstar merger (Umicore / Zinifex)</li> <li>NA-Cumerio</li> </ul>   
Portfolio restructure	<ul style="list-style-type: none"> <li>Reducing risk by diversification</li> <li>Betting on a single metal and thus increasing single metal exposure</li> </ul>	Smelters/ miners	<ul style="list-style-type: none"> <li>Teck Cominco – Aur resources</li> <li>Freeport – Phelps Dodge</li> </ul>   
Operational benefits	<ul style="list-style-type: none"> <li>Cost synergies in e.g. OH, R&amp;D, exploration, procurement, logistics</li> <li>Production improvements by optimizing asset structure / leverage know how</li> </ul>	Smelter/ miners	<ul style="list-style-type: none"> <li>Anglo American – CMDC*</li> <li>Norilsk Nickel – Lionore</li> </ul>  

**BOLIDEN**

\* Cia Minera Disputada de Condes  
Source: Press clippings; Company websites

# Despite strong M&A activity, the level of consolidation has not increased significantly and still shows room for further global consolidation

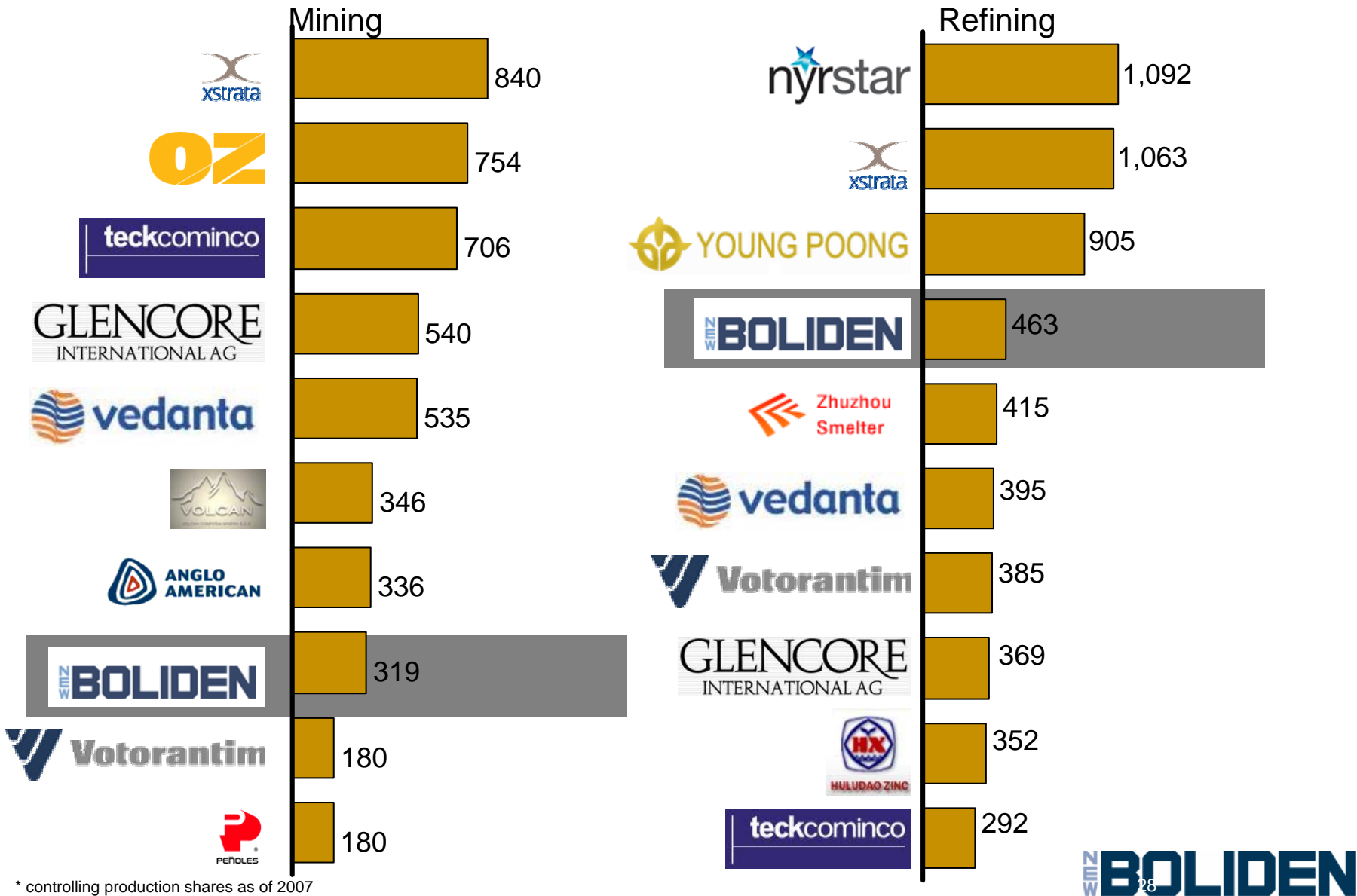
Market share of top five companies  
Percent



\* data as of 2006  
 \*\* China production included in the analysis might underestimate actual production  
 \*\*\* Refers to 2000 and 2007  
 Source: Raw Materials Database (controlled production – normal method) as of 20/08/2008

# Boliden is a top 5 zinc refiner, but must double in size to be a top 3 player

2008; Thousand tonnes of metal content



\* controlling production shares as of 2007

Source: Raw Materials Group (Jul 2008), Company websites

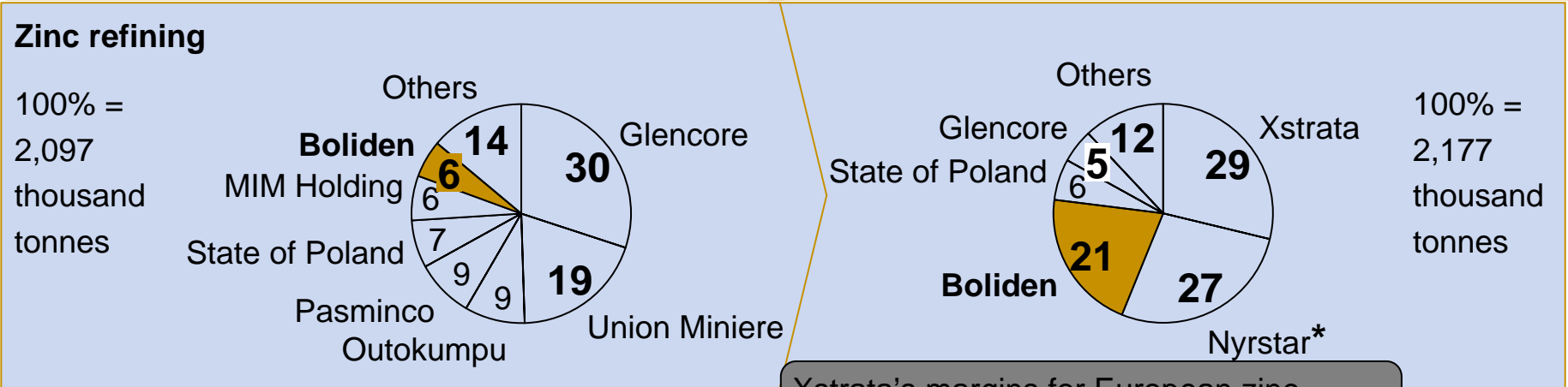
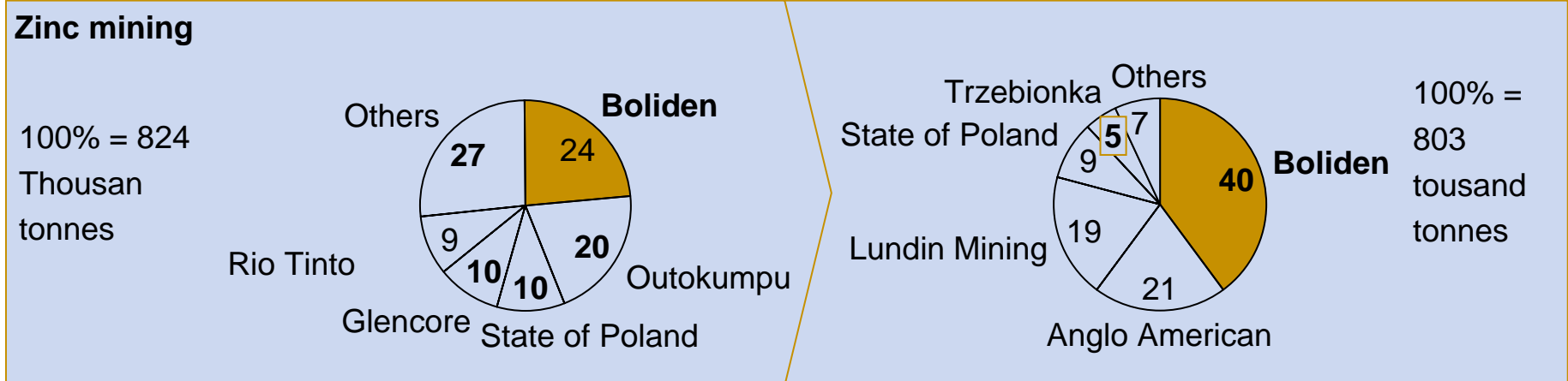


# The zinc market has further consolidated, and margins in midstream have increased

## European industry structure

Percent of total European Zinc production

2000 → 2007



Xstrata's margins for European zinc refining from 12.9% to 21.9% last 5 years

\* Umicore's and Zinifex zinc refining assets merged to form Nyrstar in 2008

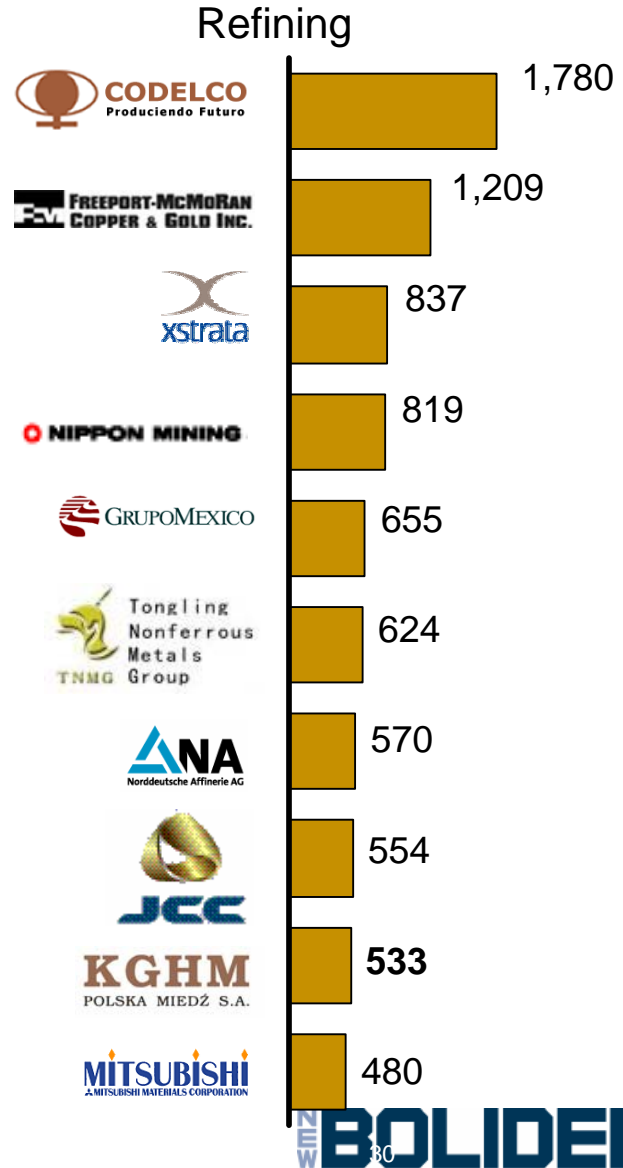
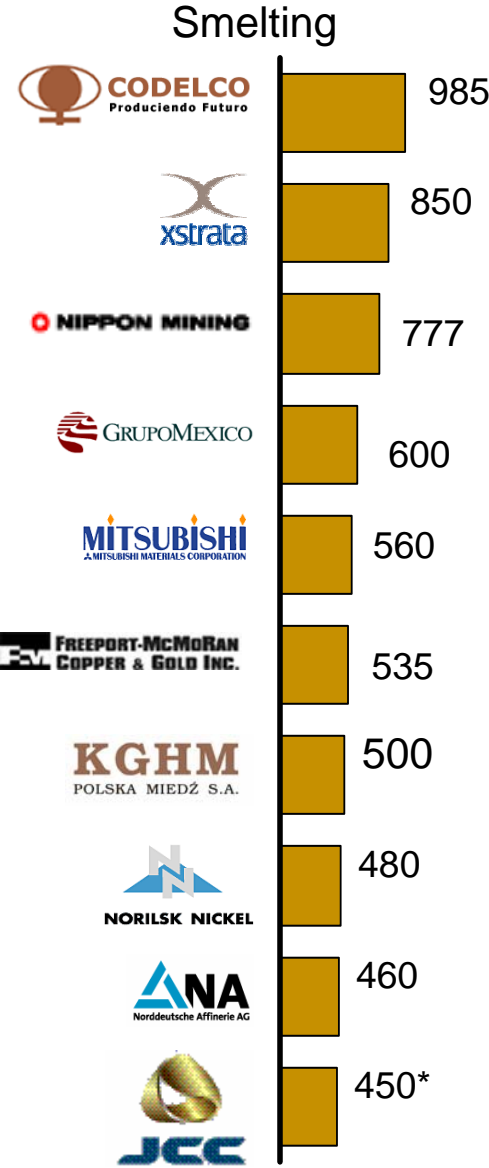
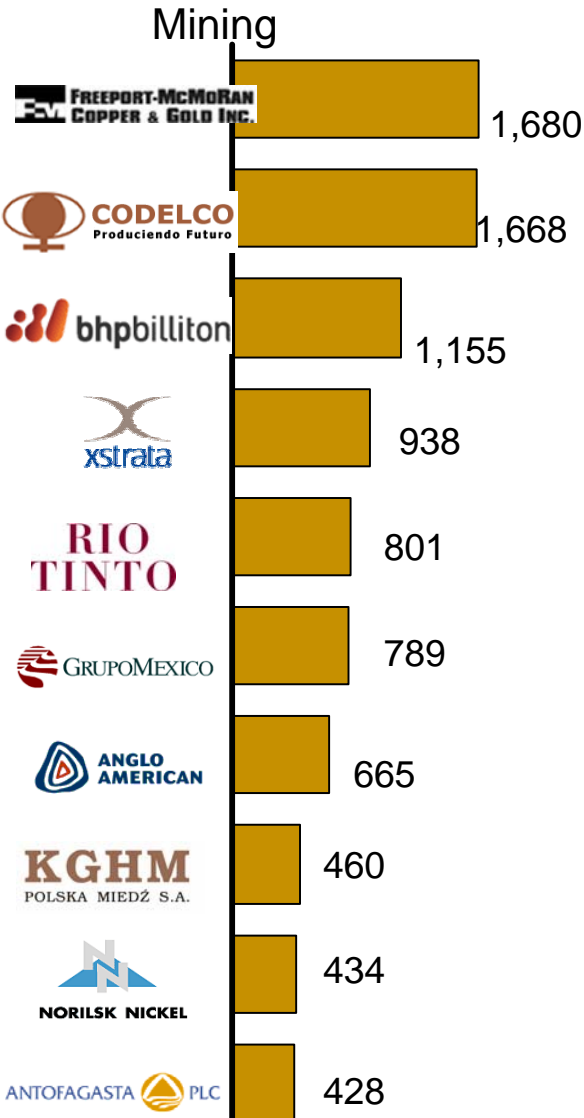
\*\* EBITDA margins; Xstrata's margin improvement considered as an effect of larger concentrate volumes driving refining demand; Umicore's zinc margins declined from 12.9% to 5.3% but mainly active in Zinc specialty products (zinc powders, zinc oxide, zinc building products);

Source: Raw materials database



# The copper industry is dominated by large, multinational conglomerates

2007; thousand tonnes of metal content



\* as of 2006  
 Source: Raw Materials Group (normal controlled production), Company websites

# M&A activity has resulted in more consolidated European copper market, but midstream margins have not improved

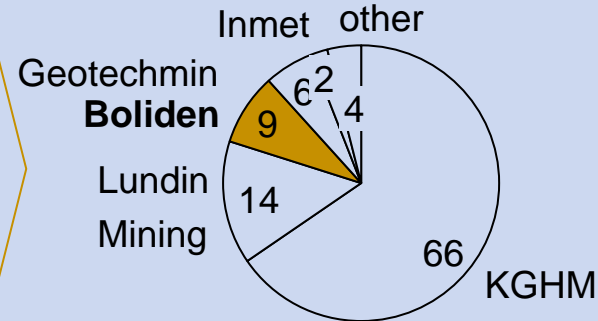
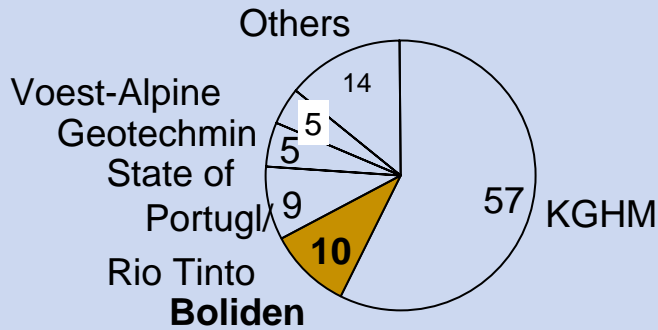
## European industry structure

Percent of total European Copper production

2000 → 2007

### Copper mining

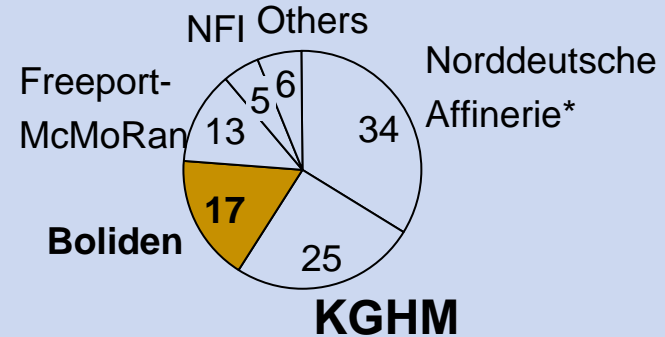
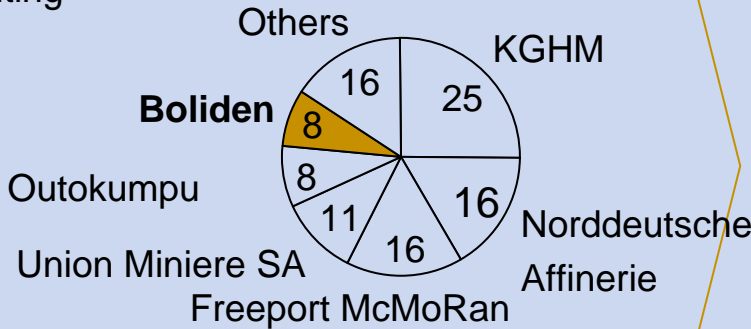
100% = 841  
Thousand  
tonnes



100% = 695  
Thousand  
tonnes

### Copper smelting

**2000**  
100% =  
1,848  
Thousand  
tonnes

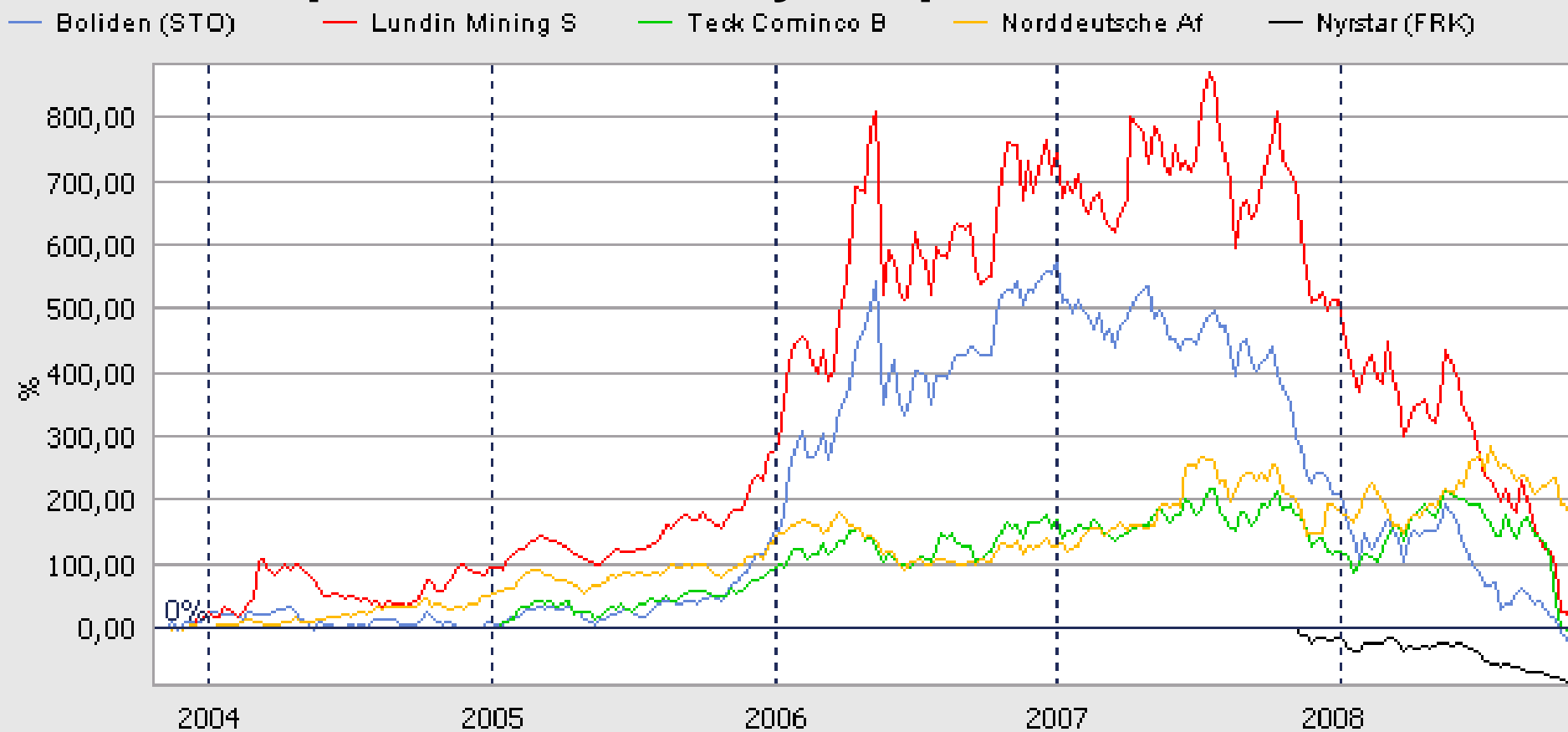


**2007**  
100% =  
2,019  
Thousand  
tonnes

Norddeutsche Affinerie's EBITDA margins remained stable at 5.8% (from 5.6%)

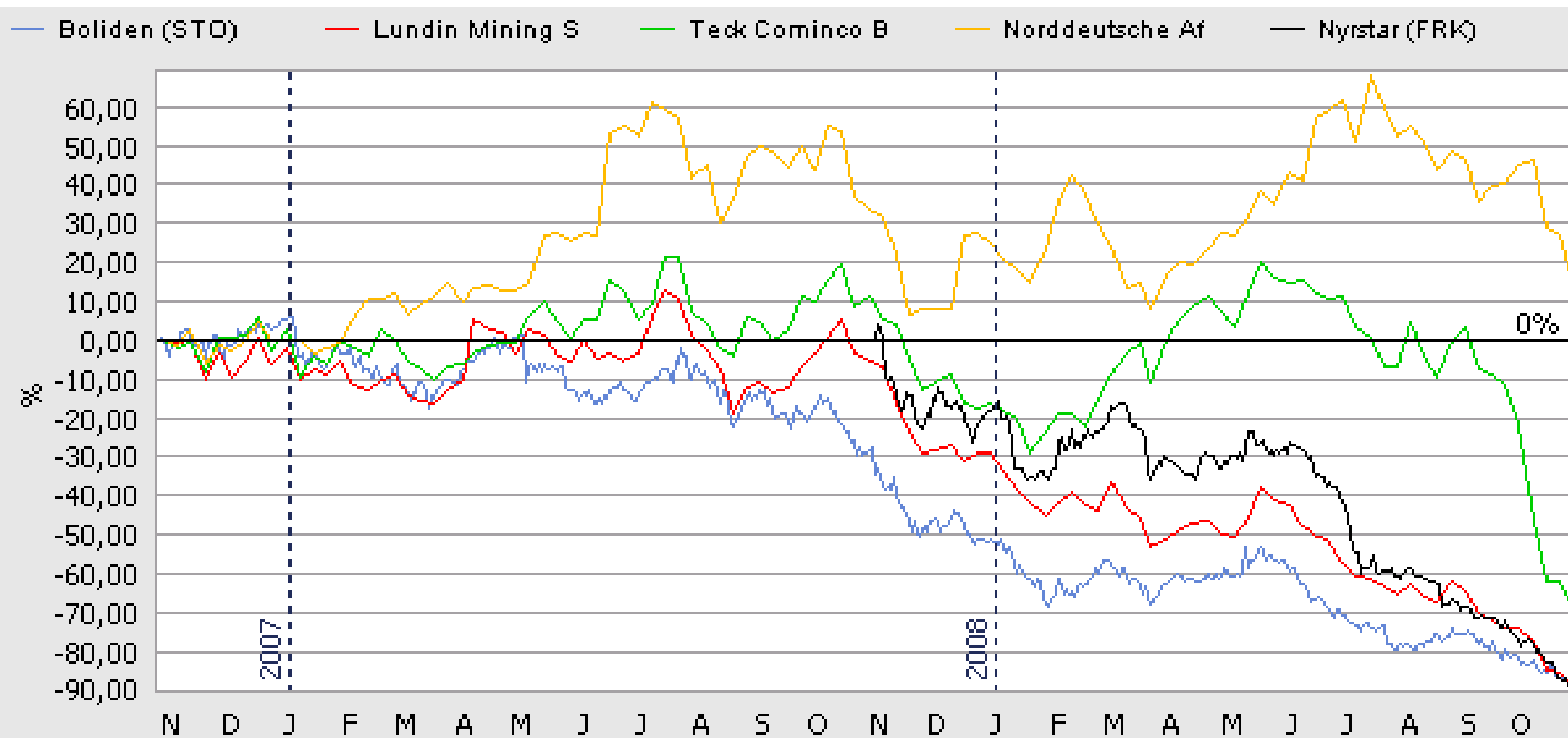
\* As of 2008 (acquired Cumerio)  
Source: Raw materials database

# Mining & Metals companies – share price development recent 5-year period

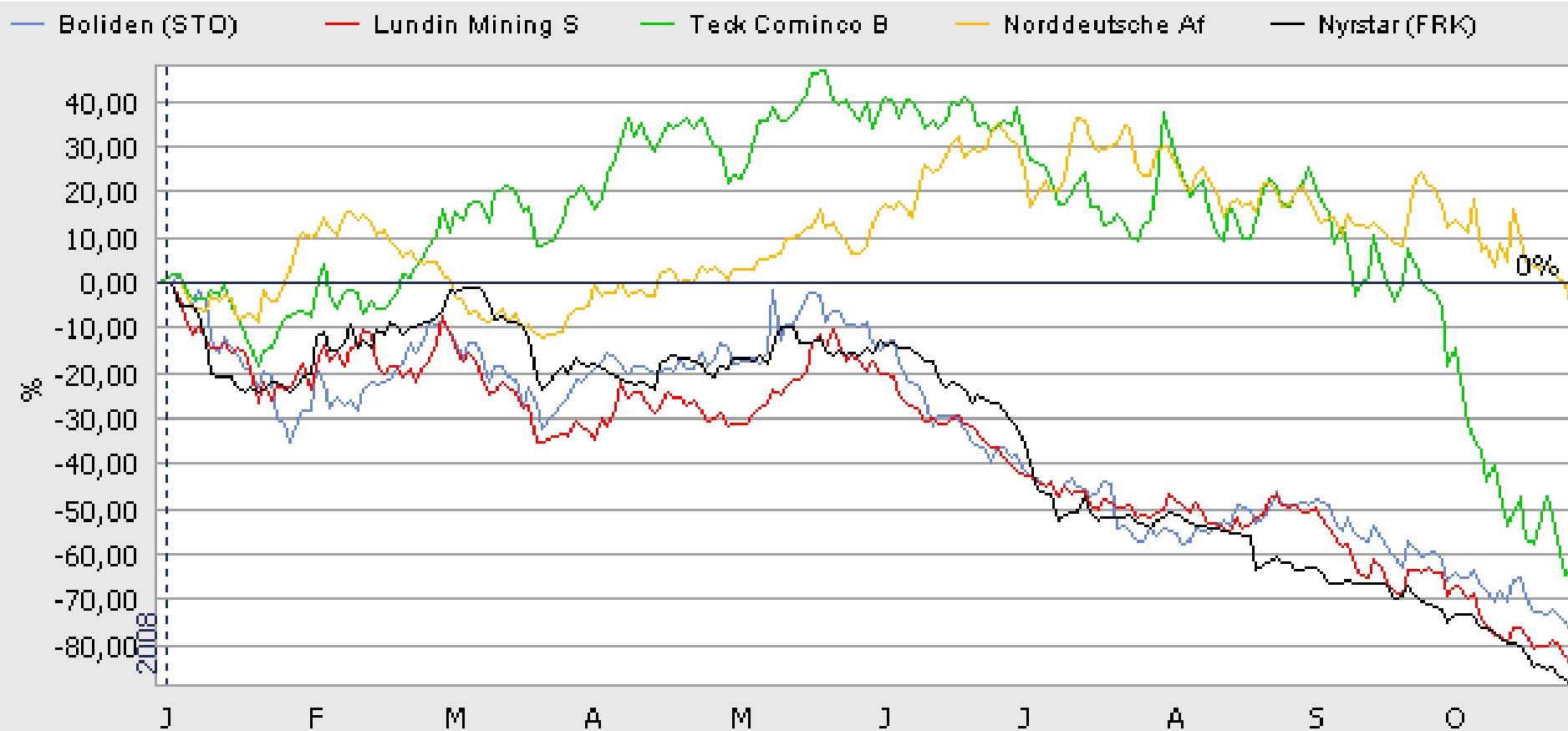




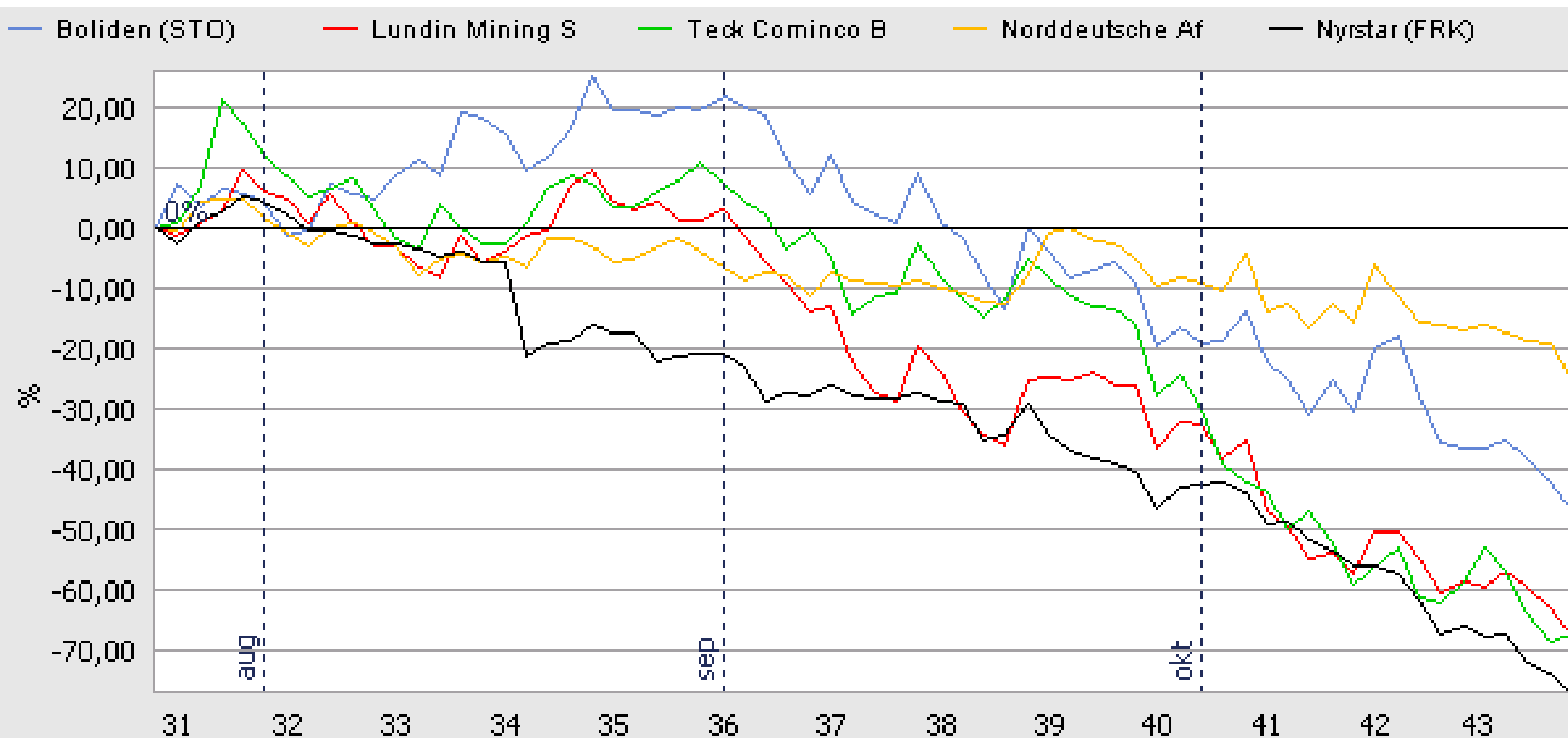
# Mining & Metals companies – share price development recent 2-year period



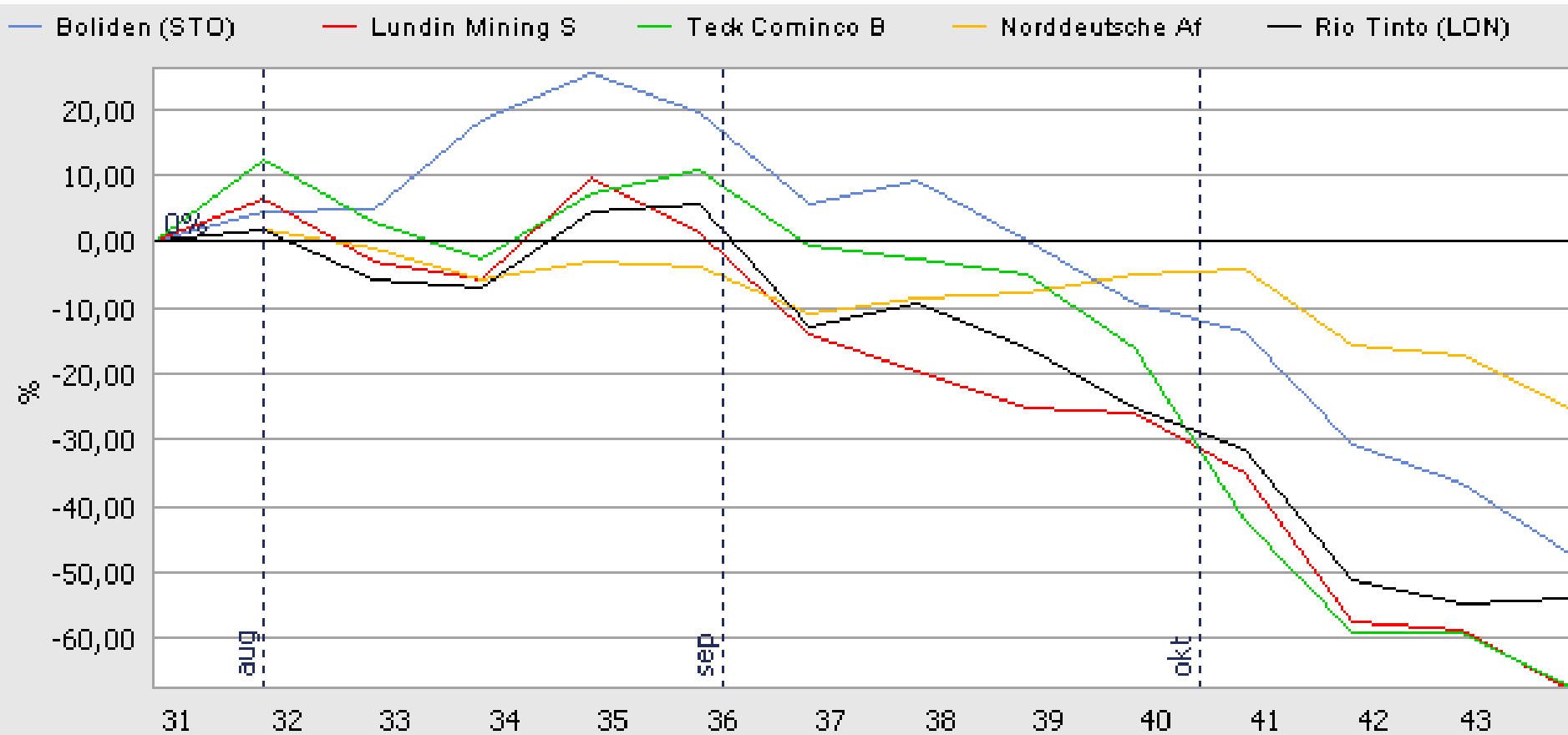
# Mining & Metals companies – share price development since 1<sup>st</sup> January 2008



# Mining & Metals companies – share price development recent 3 months



# 3 months



# Conclusion industry trends

- Cyclical industry
- Low zinc prices
- Level of consolidation is low but increasing
- Substantial capacity reductions in industry
- Forecasts from analysts suggest strong period after trough