



Current trends in the global metal and minerals market: Scandinavian competitiveness in perspective

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CRU Strategies

- **A metals and minerals market consultancy firm**
- **Specialise in valuation, strategy and negotiation support projects**
- **A key part of our work is commodity price and market forecasting**
- **We also utilise a series of Cost Models to benchmark projects and operations**
- **Several models have been constructed and take operational parameters, rather than absolute costs as their basis**



Commodity Price ‘Climate Change’.... Hot Spots

CRU Commodity Price Climatic Zones – What’s hot to 2012?



– “Hot”



– “Warm”



– “Cool”



– “Cold”

Tin, Uranium, Iron Ore,
Met Coal/Coke, Tungsten, **Copper**,
Palladium, **Nickel**

Steel (Global Rebar Index), Urea,
Aluminium, Ammonia, Gold, Alumina,
Platinum

Lead, Molybdenum, Bauxite

Vanadium, Phosphate, Silver, Sulphuric
Acid, Cobalt, Zinc, Sulphur

* Indicative forecast average 2012 prices versus February 2010 base (nominal prices)



Scandinavia is home to several leading producers.....

- LKAB
- SSAB
- Talvivaara
- Boliden
- Outokumpu
- Hydro
- Elkem
- Eramet
- Norilsk
- Rio Tinto Alcan
- Alcoa
- Rusal
- Vale Manganese
- Xstrata Nikkelwerk
- OM Group
- and more.....

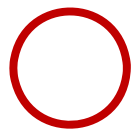




.....producing a wide range of metals and minerals.

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Unq	105 Unp	106 Unh	107 Uns	108 Uno	109 Une	110 Unn								

Regular CRU product coverage
Bespoke CRU product coverage

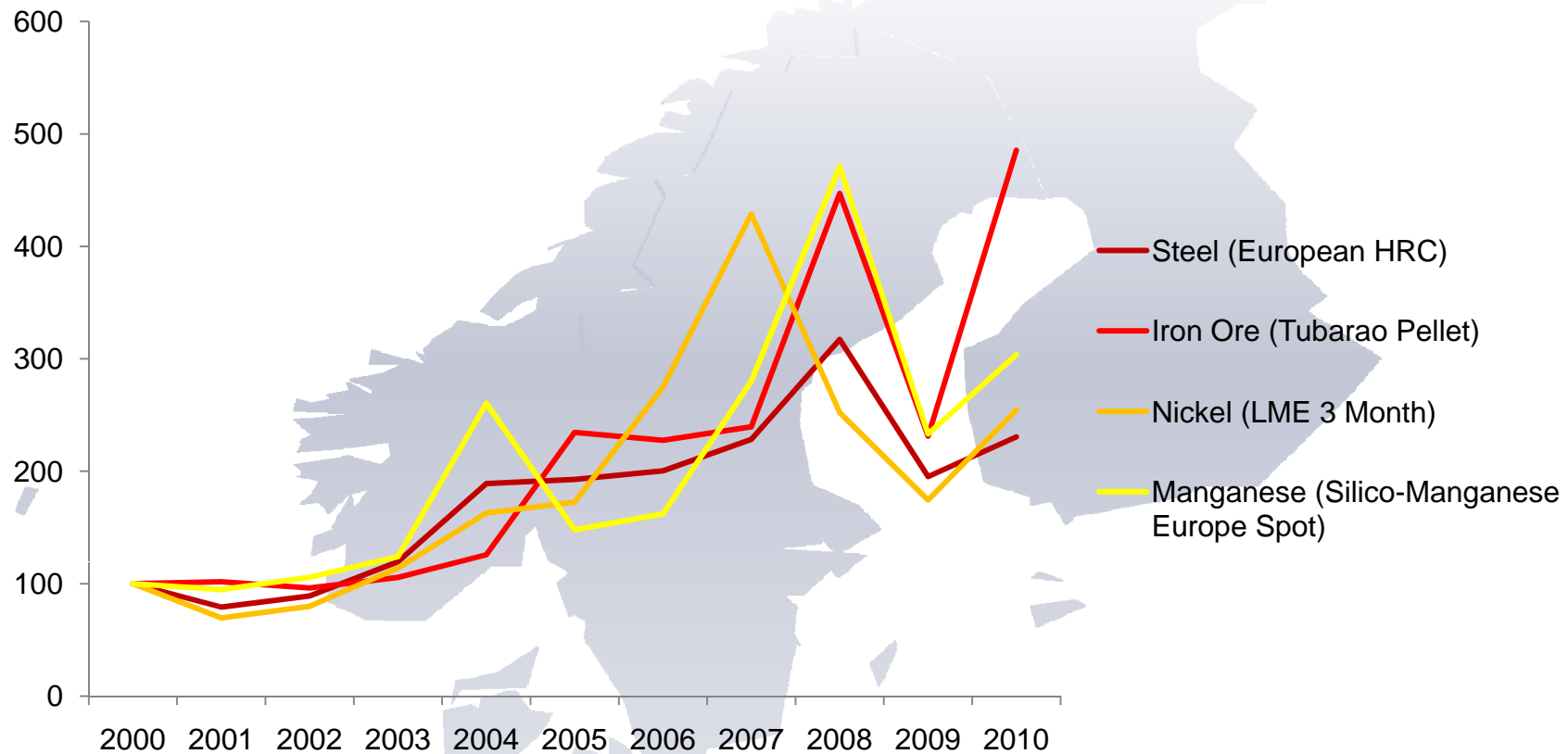


Produced in Scandinavia

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr



Since 2000 prices have accelerated across the ferrous sector, expressing significant volatility.....

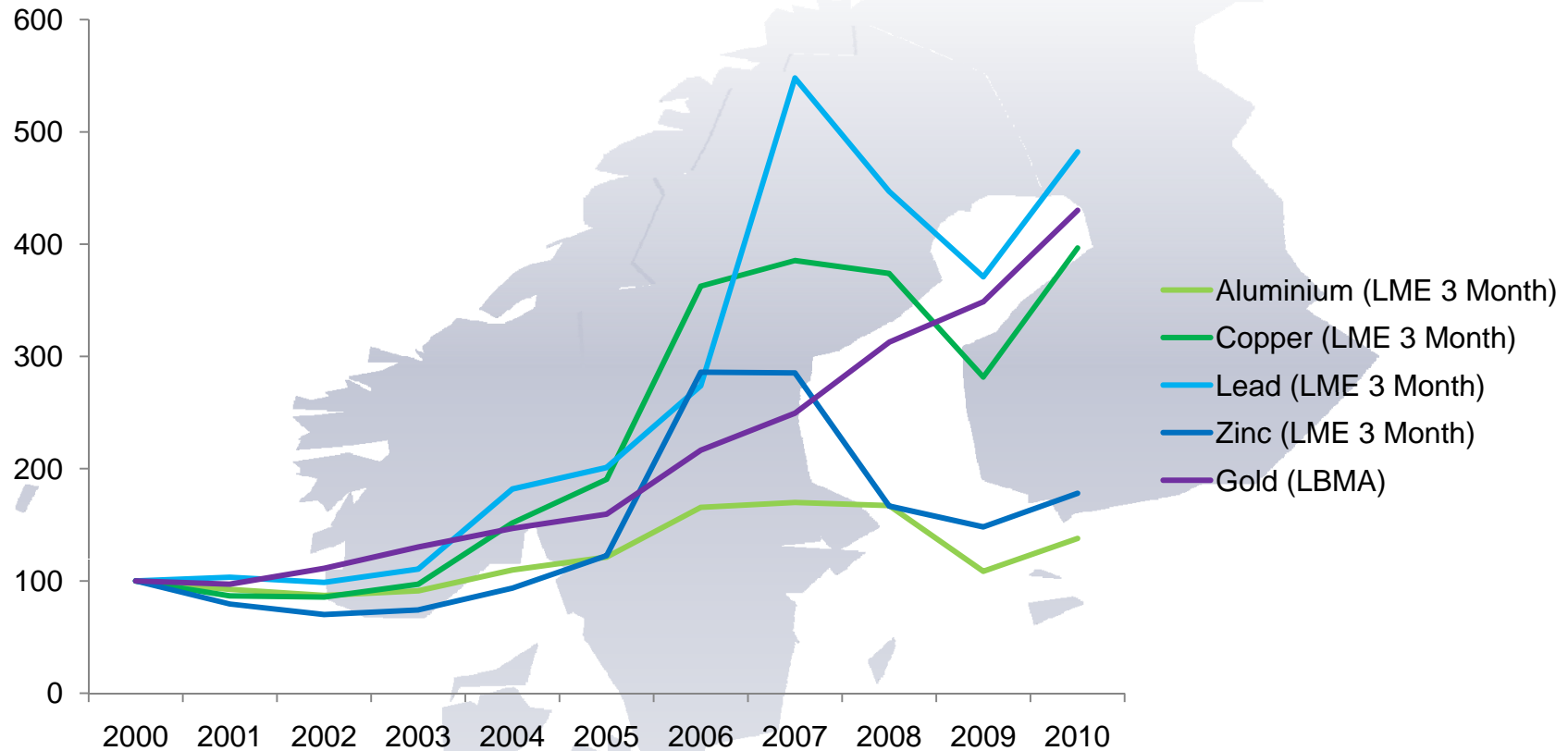


Rebased: 2000 = 100

Data: CRU Analysis, CRU Strategies



.....the non-ferrous sector has shown a similar pattern.....

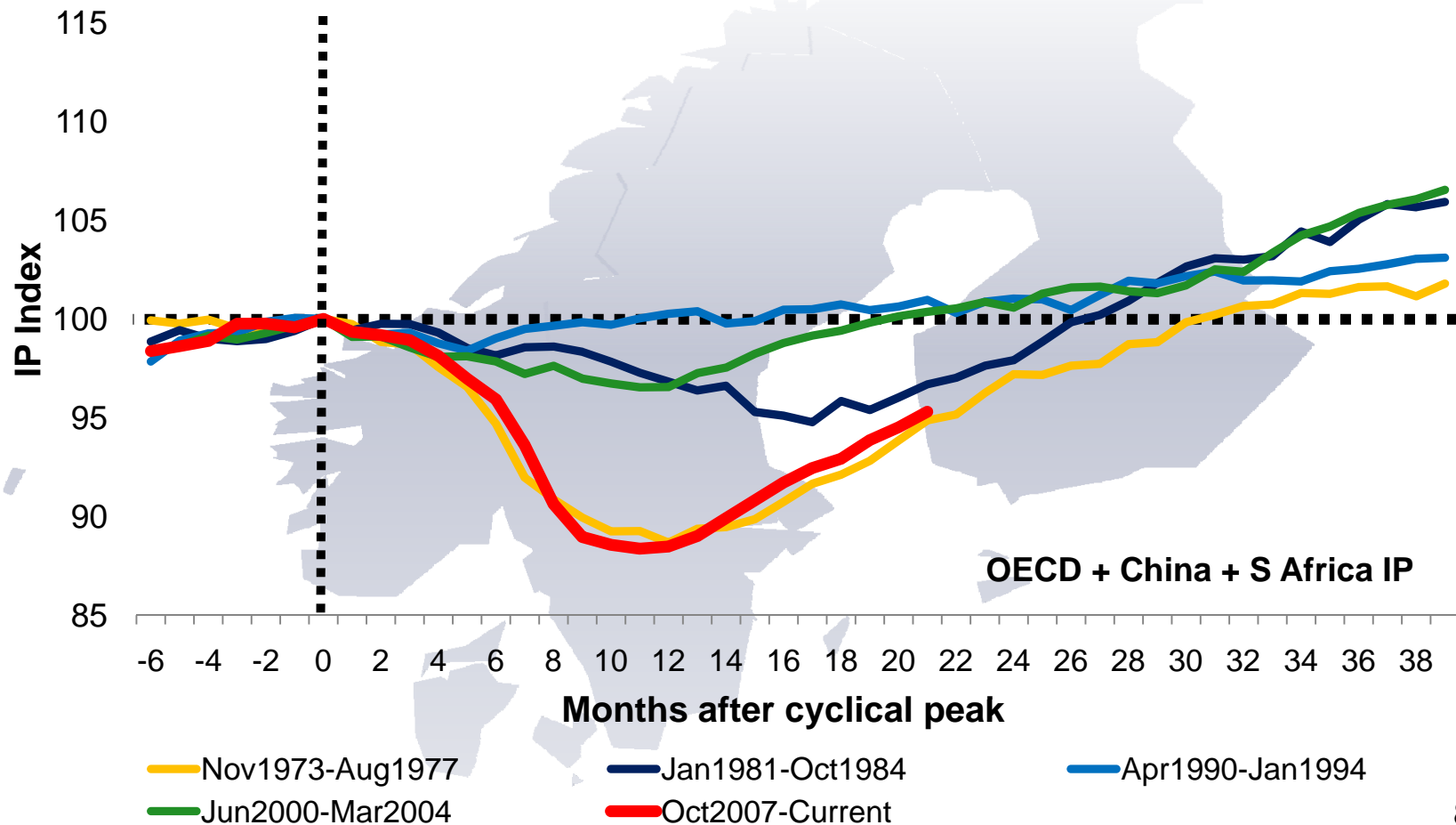


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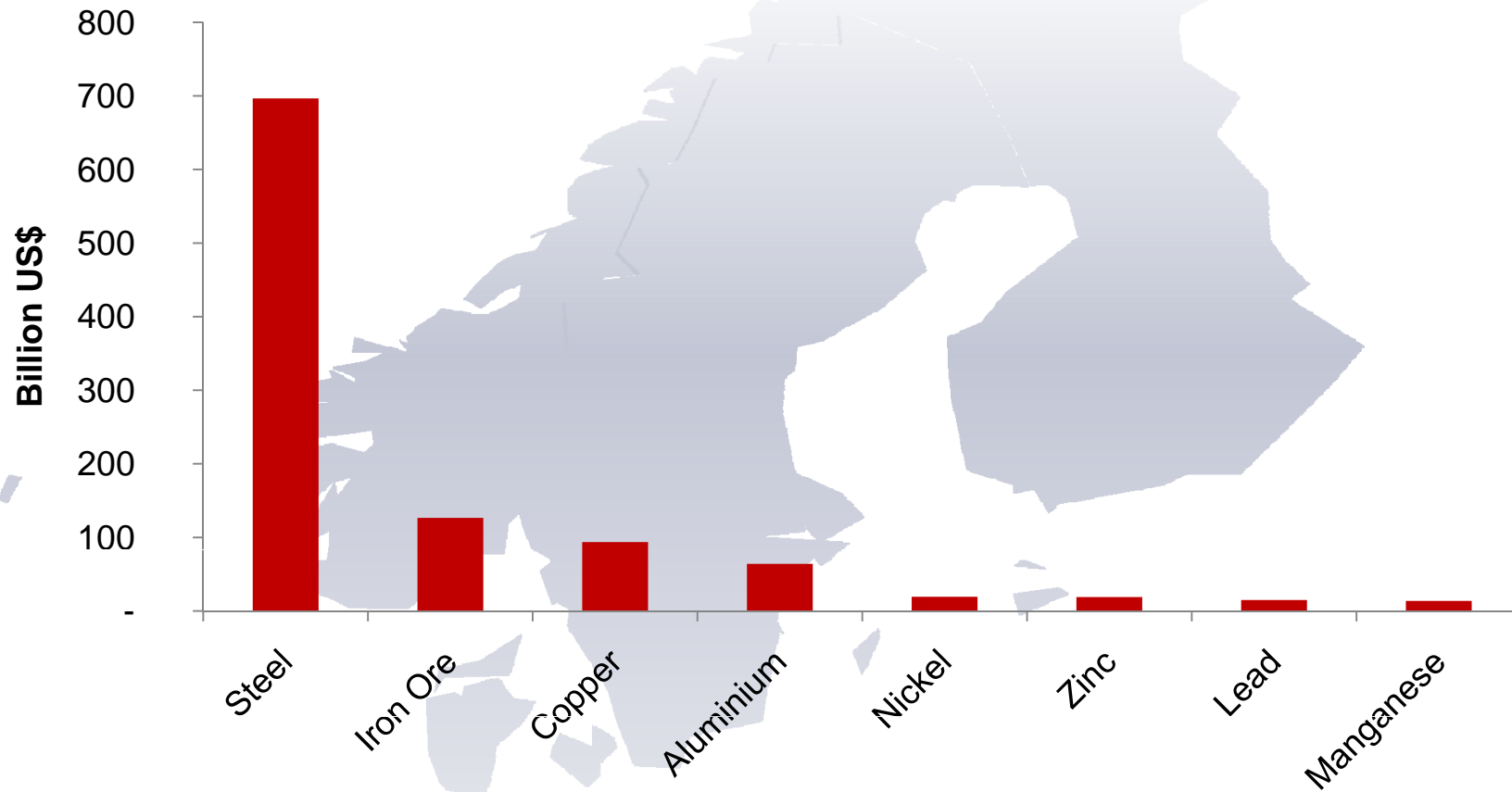


.....but judging by current price trends and macro economic forecasts, the next few years should see a revival for the metals and mining industry.



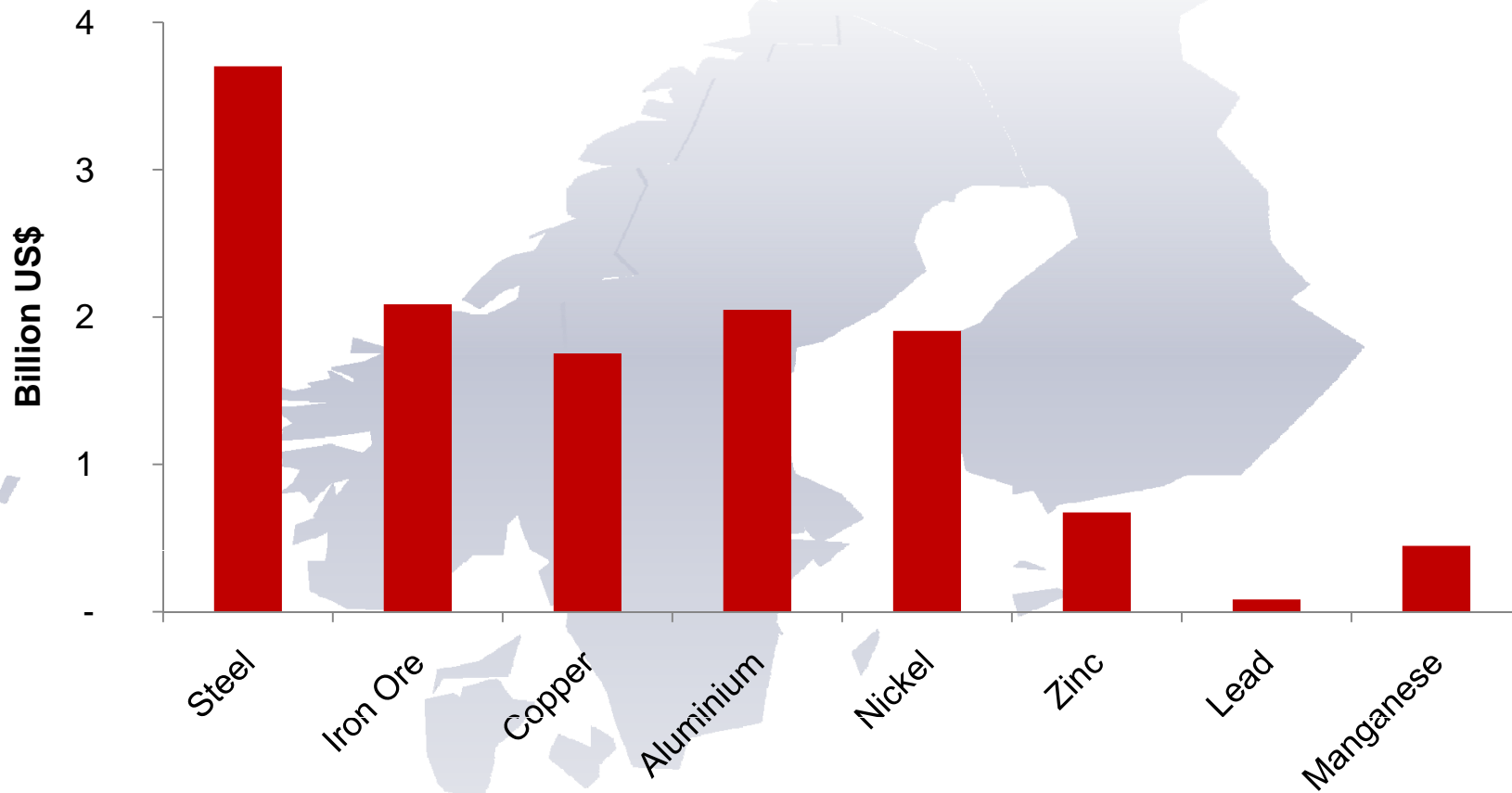


In 2009 what was the total global value of the markets in which Scandinavian companies operate.....





.....and what was Scandinavia's share?





Businesses generally measure relative competitive position in three key areas

- **Cost:** production cost, overheads, marketing cost etc.
- **Service:** delivering a tailored or unique service to the client for which a premium is paid
- **Product:** high value products can off-set high production costs, as the unit price when sold still provides sufficient margin

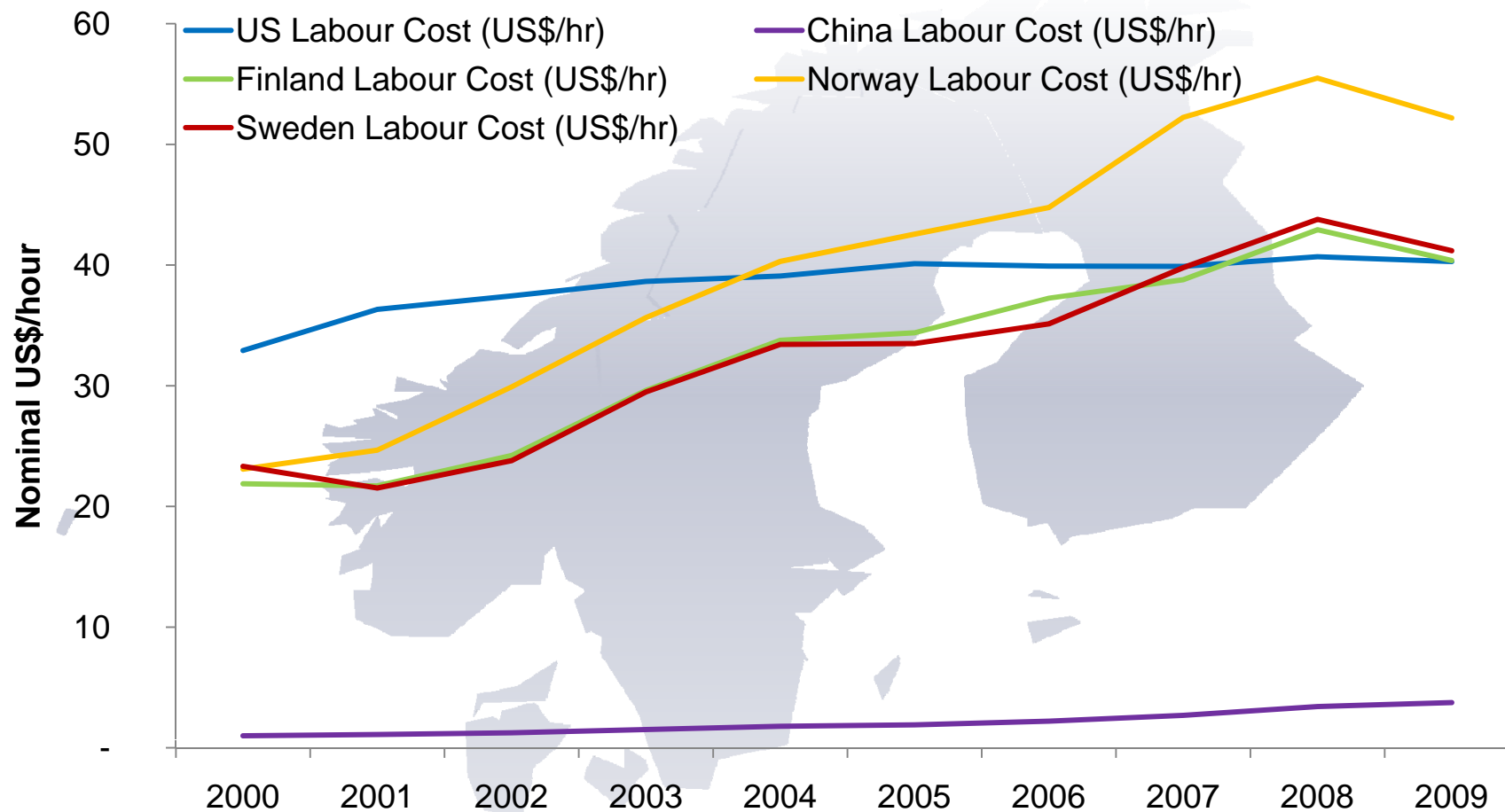


What factors are important to the competitive position of metals and mineral operations in Scandinavia?

- **Cost:**
 - **Labour:** a key input to any primary or secondary industry
 - **Productivity:** how much value are the workers generating?
 - **Energy:** crucial in almost all mineral processing applications
 - **Technology:** advances in technology usually result in lower production costs
 - **Location:** located in the high value European market
- **Service:**
 - Many companies have developed service options for their clients such as tailored finished or raw material packages.
 - Some have even broadened into the service sector by licensing their proprietary technology to others
- **Product:**
 - Downstream diversification into value added niche products

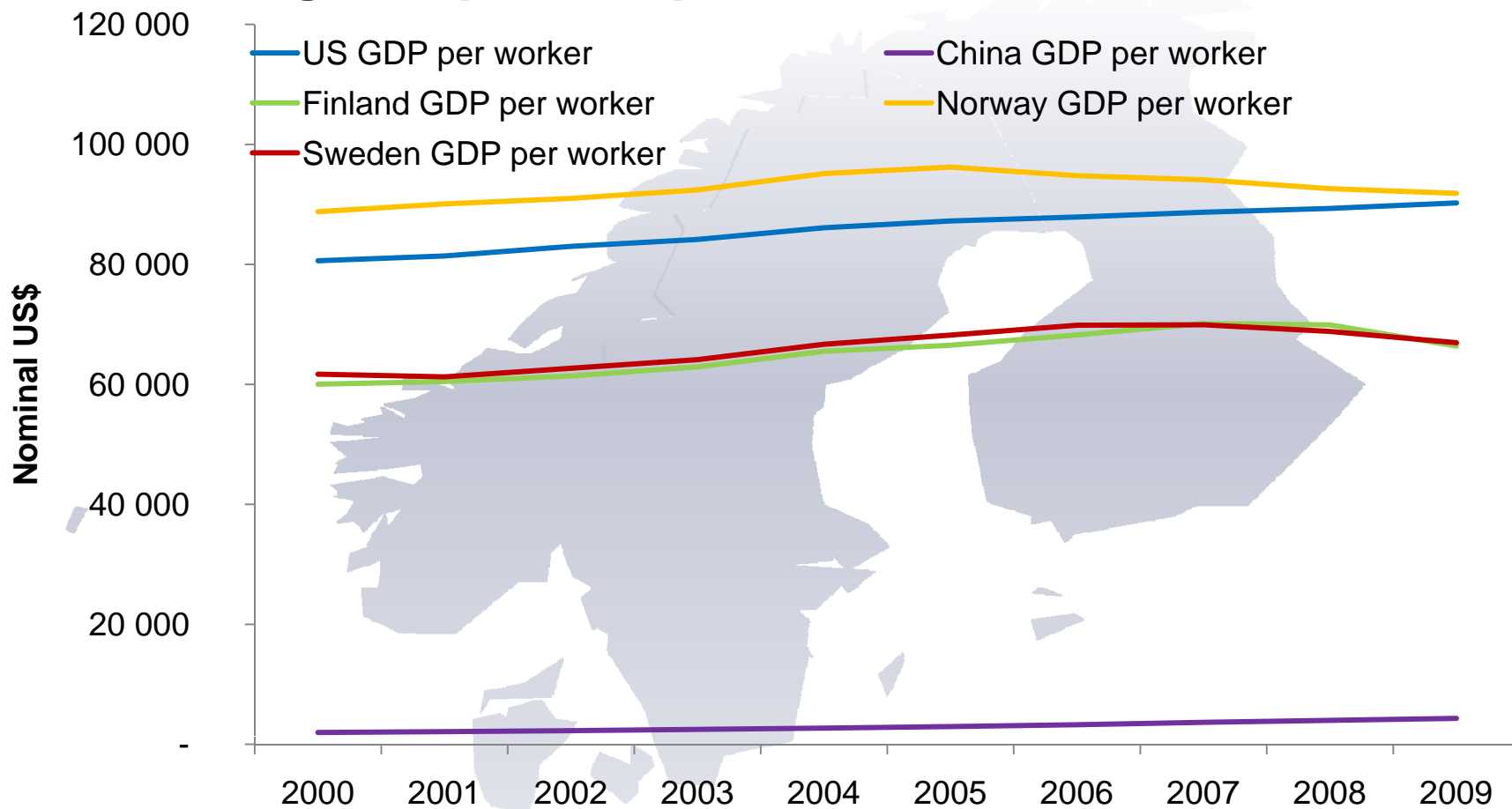


We know labour costs are higher than in developing countries.....



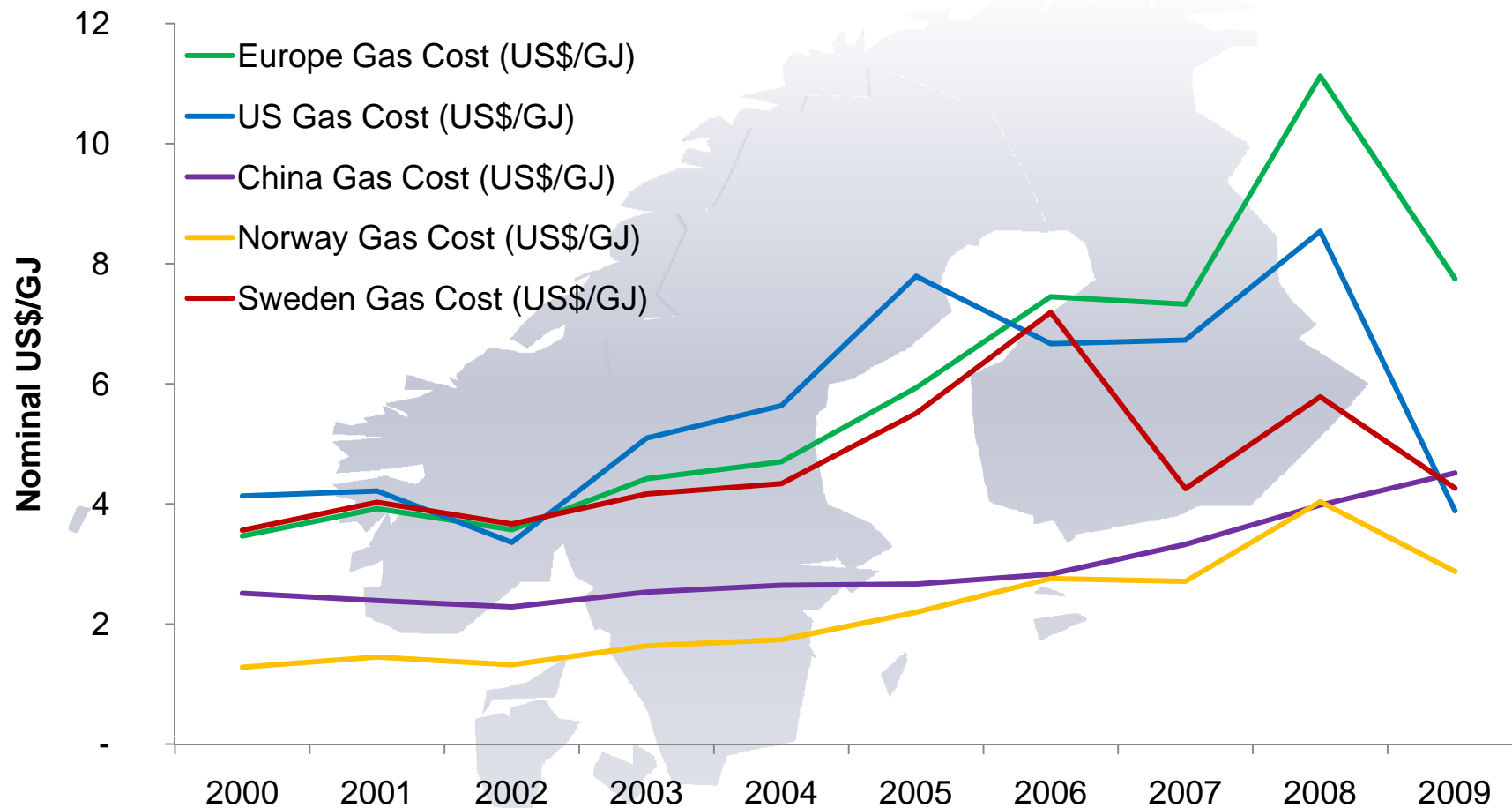


.....but productivity is a key consideration when examining competitive position.



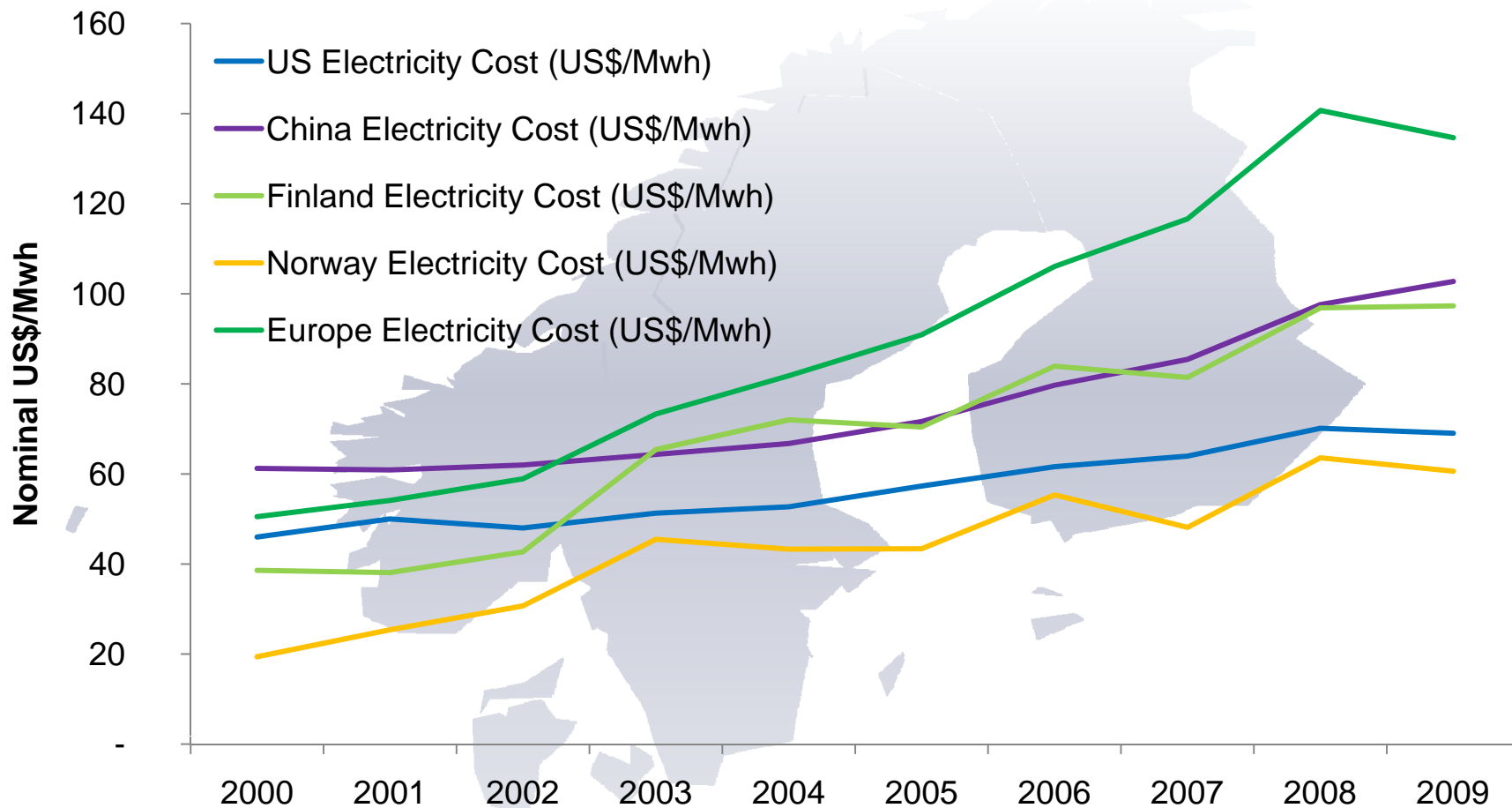


Natural gas prices are an important influence on the processing cost of almost all minerals.....





.....whereas refining costs are more likely to be dominated by electricity prices.





How do technological factors apply and what is their significance?

- **Scandinavian companies have adopted or pioneered several innovative processing techniques:**
 - Flash smelting
 - Bio-heap-leaching
 - Iron ore pelletisation
- **The region is also home to some of the world's leading metals and mining oriented engineering firms**
 - Outotec
 - Aker
 - Sandvik
 - ABB
- **Technology makes an impact in the productivity of the workforce and the raw material cost incurred by a given company.**

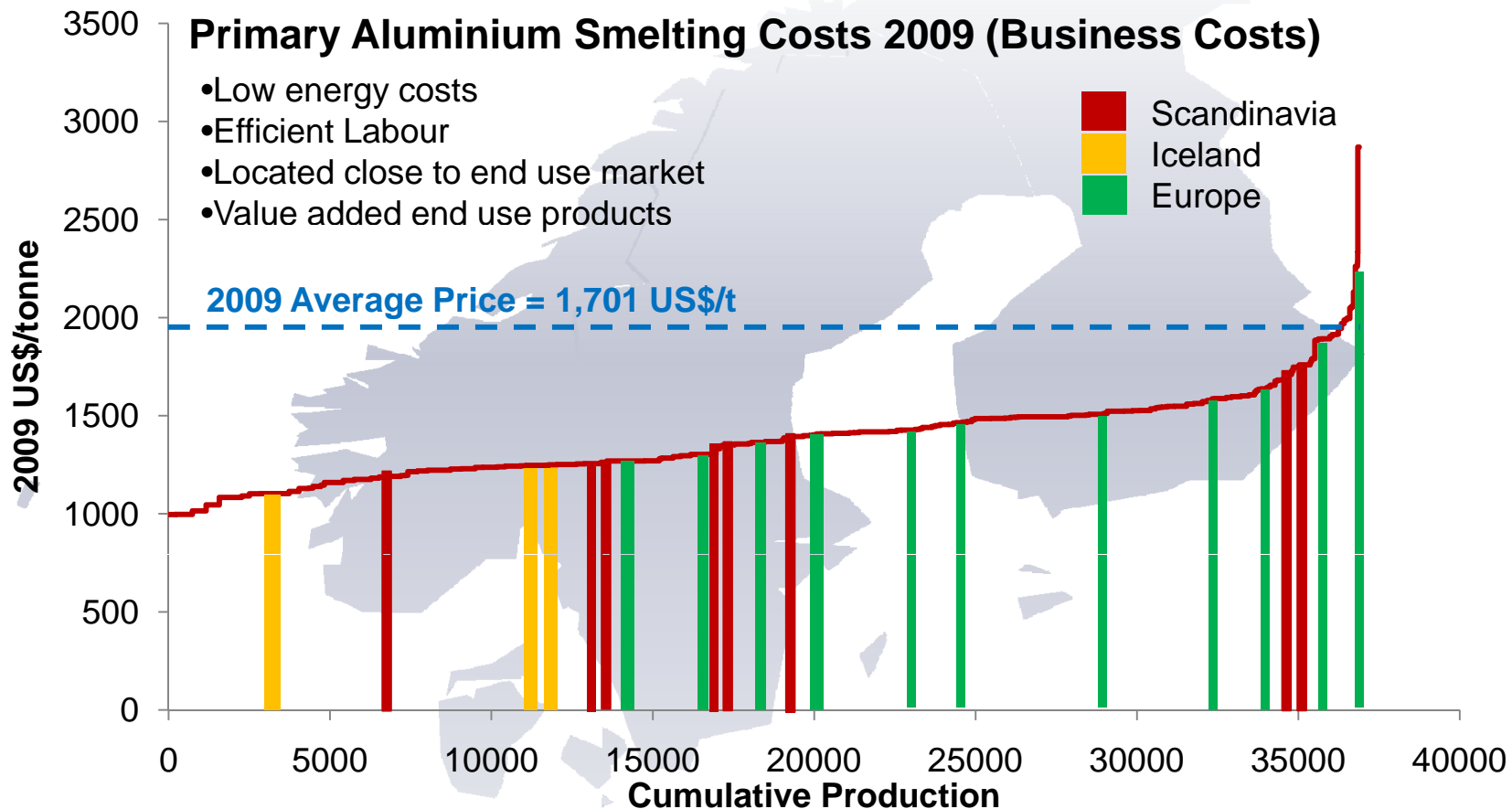


Service and Product; how do Scandinavian companies compete?

- **Service**
 - Domestic distribution network for products
 - Long-standing agreements with European consumers
 - Licensing of technology
 - Trading services
- **Product:**
 - **Steel**
 - High end automotive steels, especially multiphase and high strength sheet;
 - High end heat treated plate
 - Downstream prefabricated construction
 - Specialist stainless steels
 - **Aluminium**
 - Building systems
 - Automotive grade products

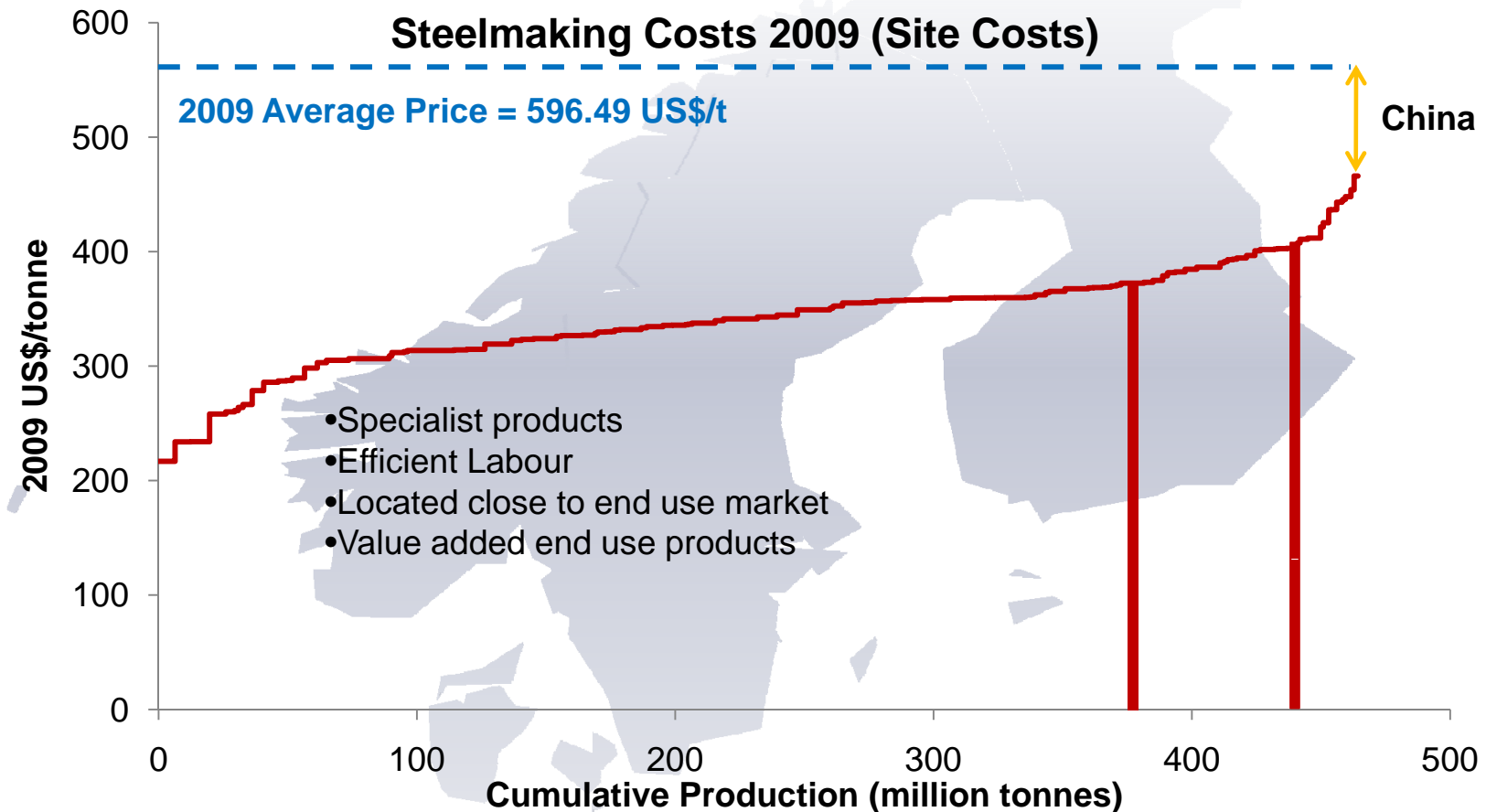


So, how do Scandinavian operations fit onto the industry cost curves.....



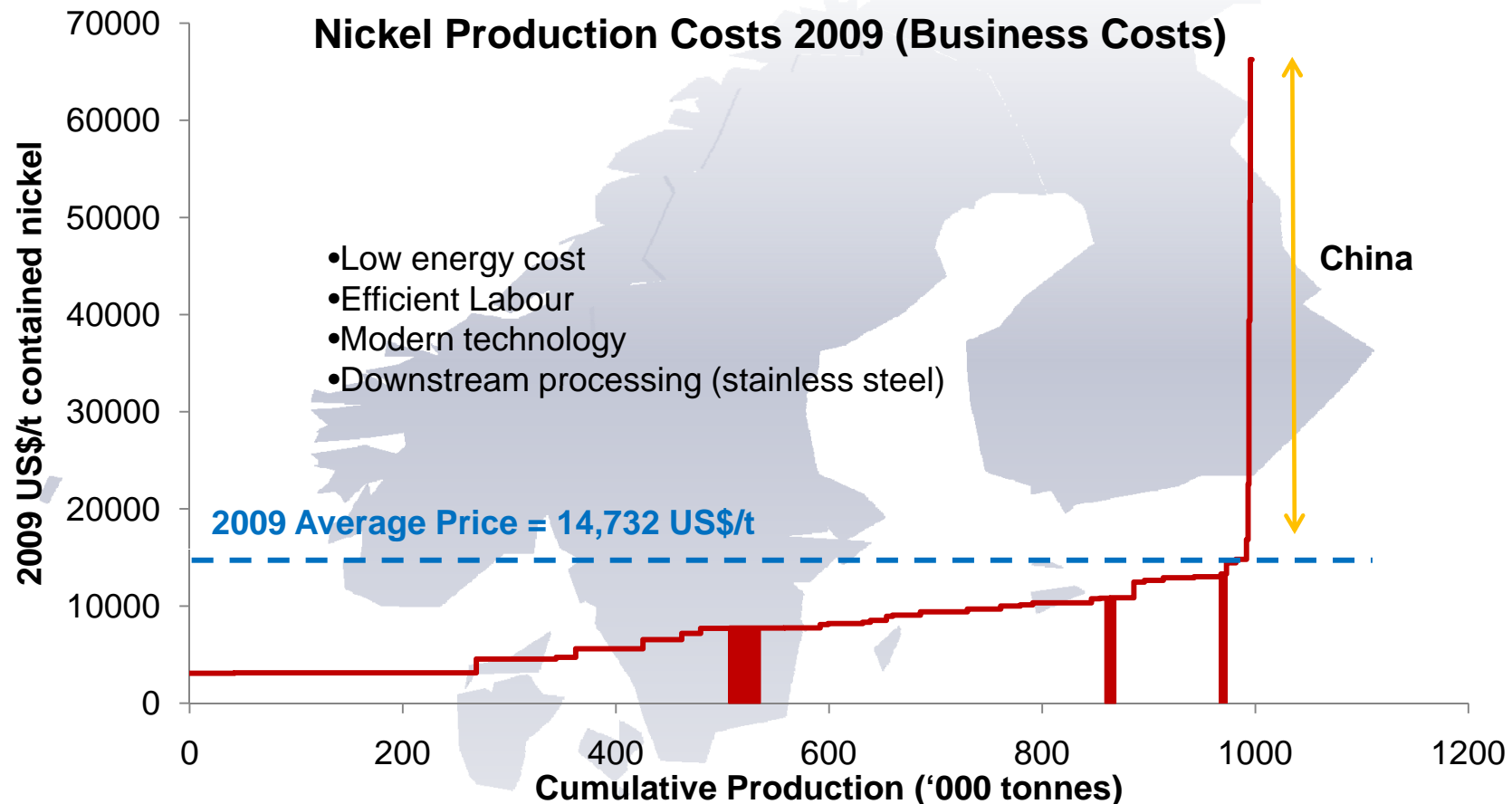


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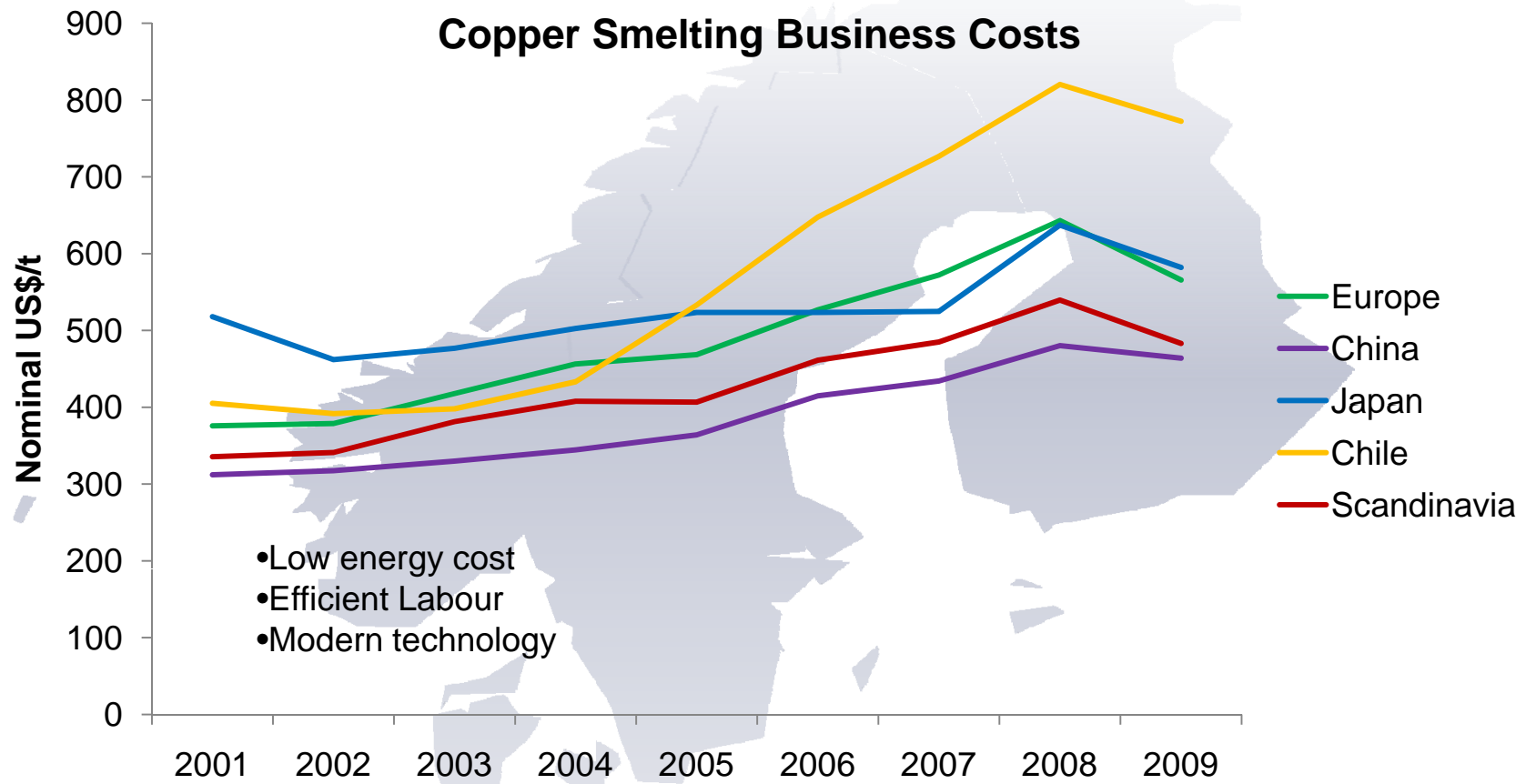


So, how do Scandinavian operations fit onto the industry cost curves.....





So, how do Scandinavian operations fit onto the industry cost curves.....





.....and how will this change in the future?

- Demand for almost all commodities will increase, primarily driven by China.
- To serve this demand, an ever increasing amount of new capacity will be funded and eventually operational.
- As is normally the case, the new capacity should have a higher cost base than existing producers.
- Therefore, in theory, the relative competitive position of incumbents should improve.
- But only if they use the first mover advantage to stay ahead of newer producers, by consistently improving their processing methods and maintaining a superior product offering



Summary

- **Scandinavia has some of the highest labour costs in the world...**
- **...but also a highly productive, highly skilled and well educated workforce.**
- **North Sea energy reserves and hydro power, result in lower than average energy costs to metals and mineral producers in the region....**
- **...new technologies employed by Scandinavian producers also help to make the best use of this energy.**
- **Combining a skilled workforce and modern processing methods, with high value products, enables the region to compete from a solid position in many key metals and mineral markets**



Thank you

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