



The Competitive Position of the CIS Metals Industries: the aluminium industry case study

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Metal Bulletin Russian Moscow Summit, May 31 – June 2, 2004

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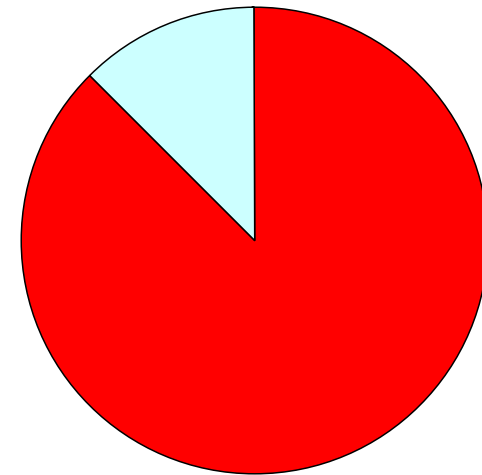
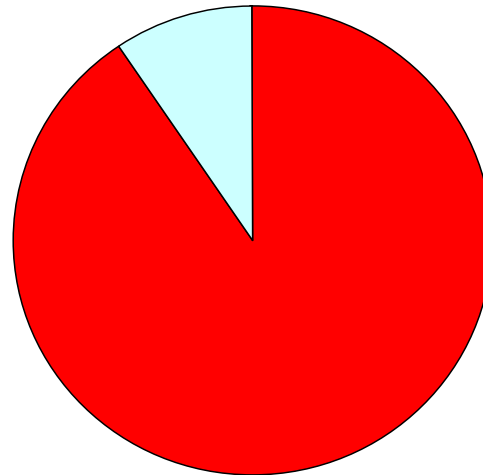
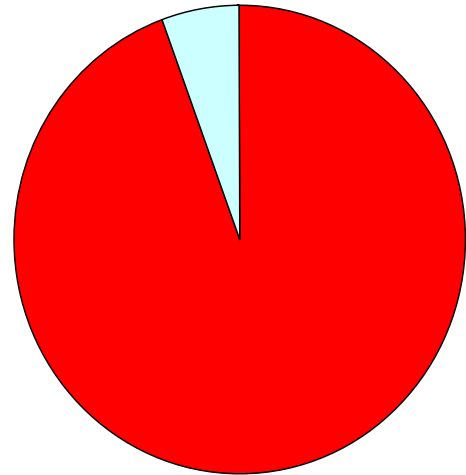
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The CIS is a major supplier of primary metal, but short of raw materials



CIS shares in world production:

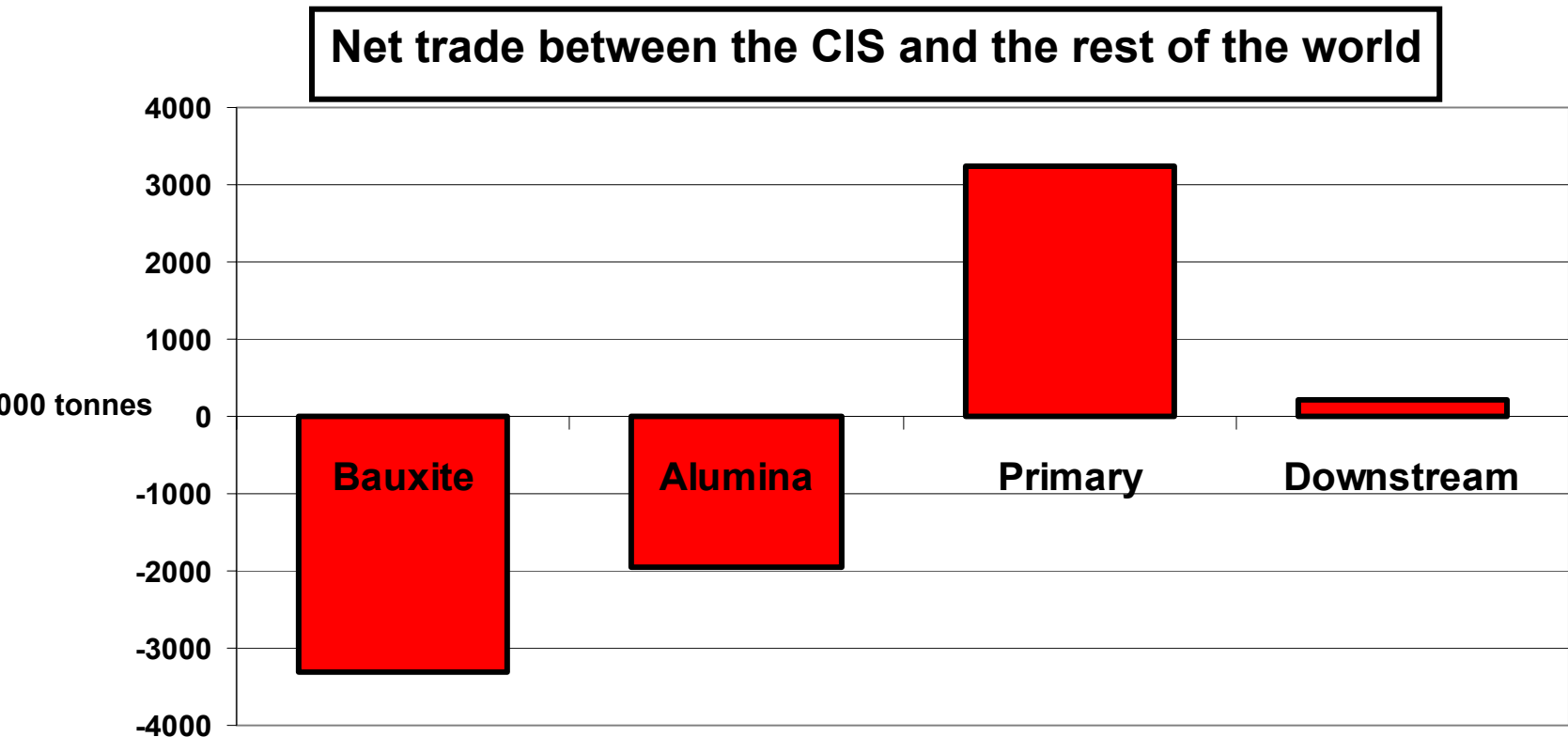
Bauxite 5%

Alumina 9%

Primary aluminium 13%



The CIS is a major importer of bauxite and alumina, and exports more than 3m tpy of primary metal



The competitive position of the smelting industry is therefore crucial



The major determinants of competitiveness can be separated into two categories

External factors, not easily controllable:

- Market prices of:
 - Power
 - Bauxite, alumina
 - Carbon, other materials
 - Labour
 - Freight

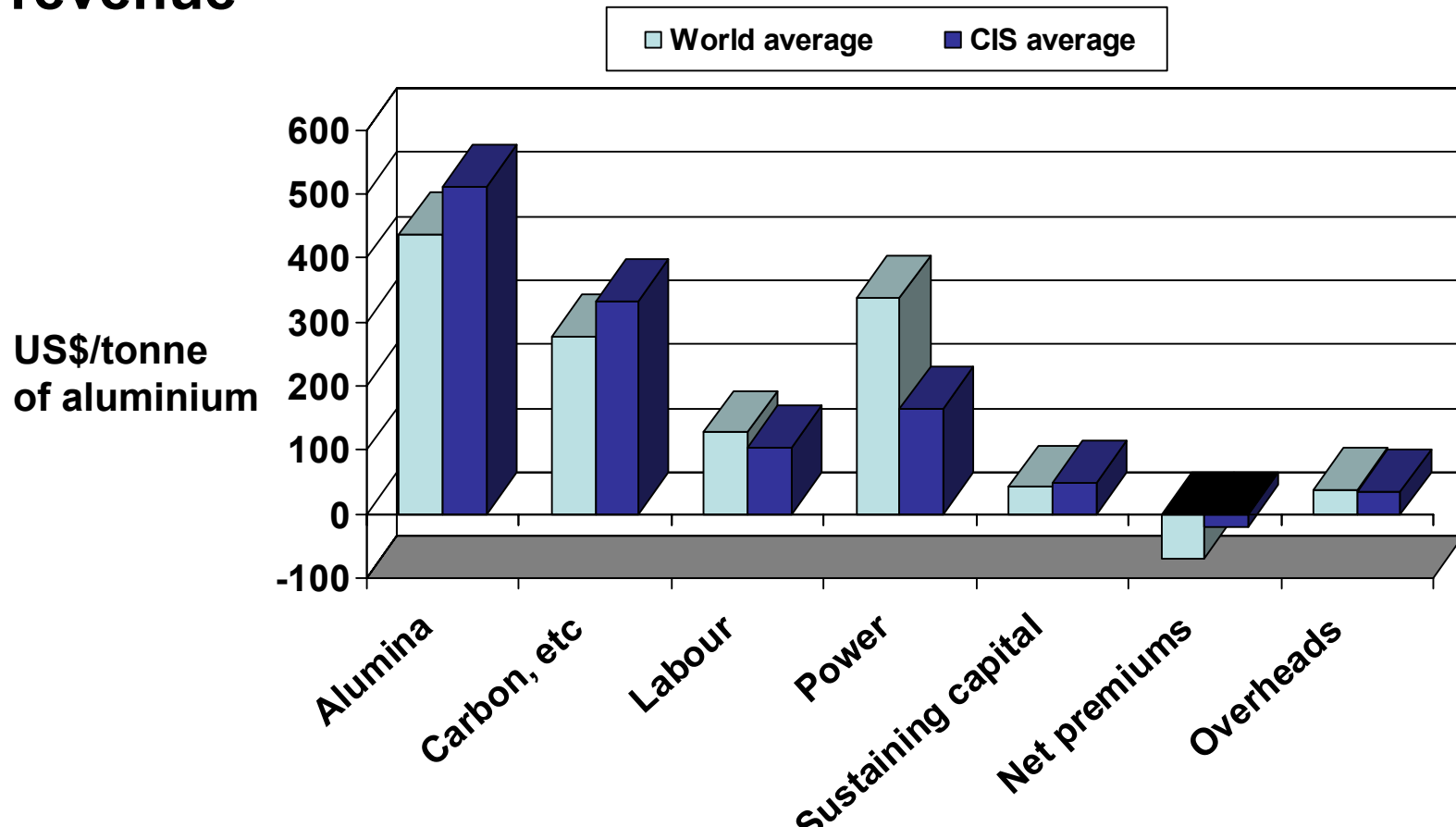
Internal, controllable factors:

- Unit consumption of:
 - Power
 - Bauxite, alumina
 - Carbon, other materials
 - Labour
- Quality, product mix, premium income
- Technical innovation

Where do the strengths and weaknesses of the CIS industry lie?



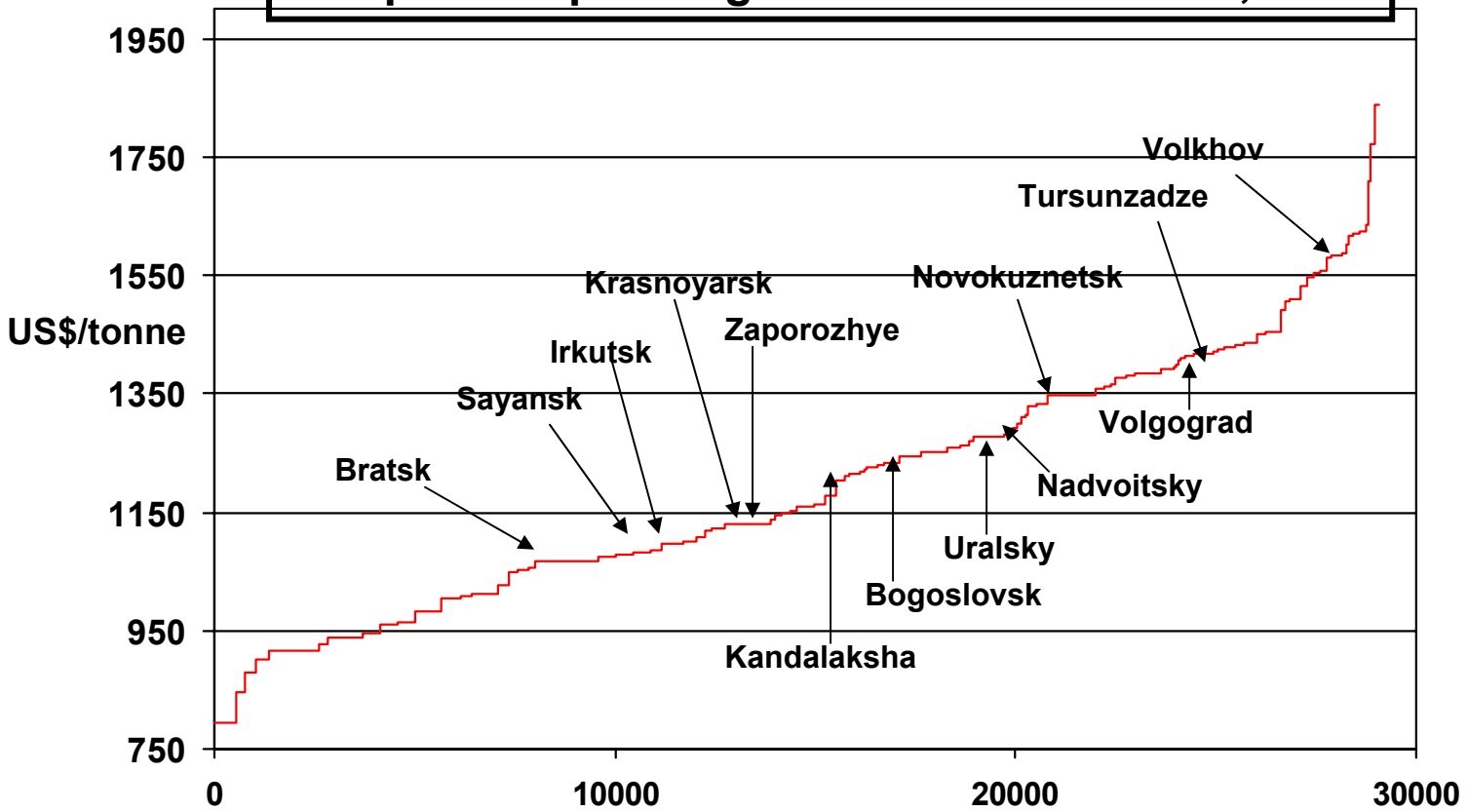
Cost components in primary production: CIS advantages in power and labour costs are offset by alumina and other raw material costs, and premium revenue





Costs at individual CIS smelters vary greatly, but the average is close to the world average

Corporate operating costs at CIS smelters, 2004



**World average
US\$1189/tonne**

**CIS average:
US\$1176/tonne**



However, total production costs tell us little about the competitive position of each plant.

Detailed cost modelling enables us to drill down into the components of production costs:

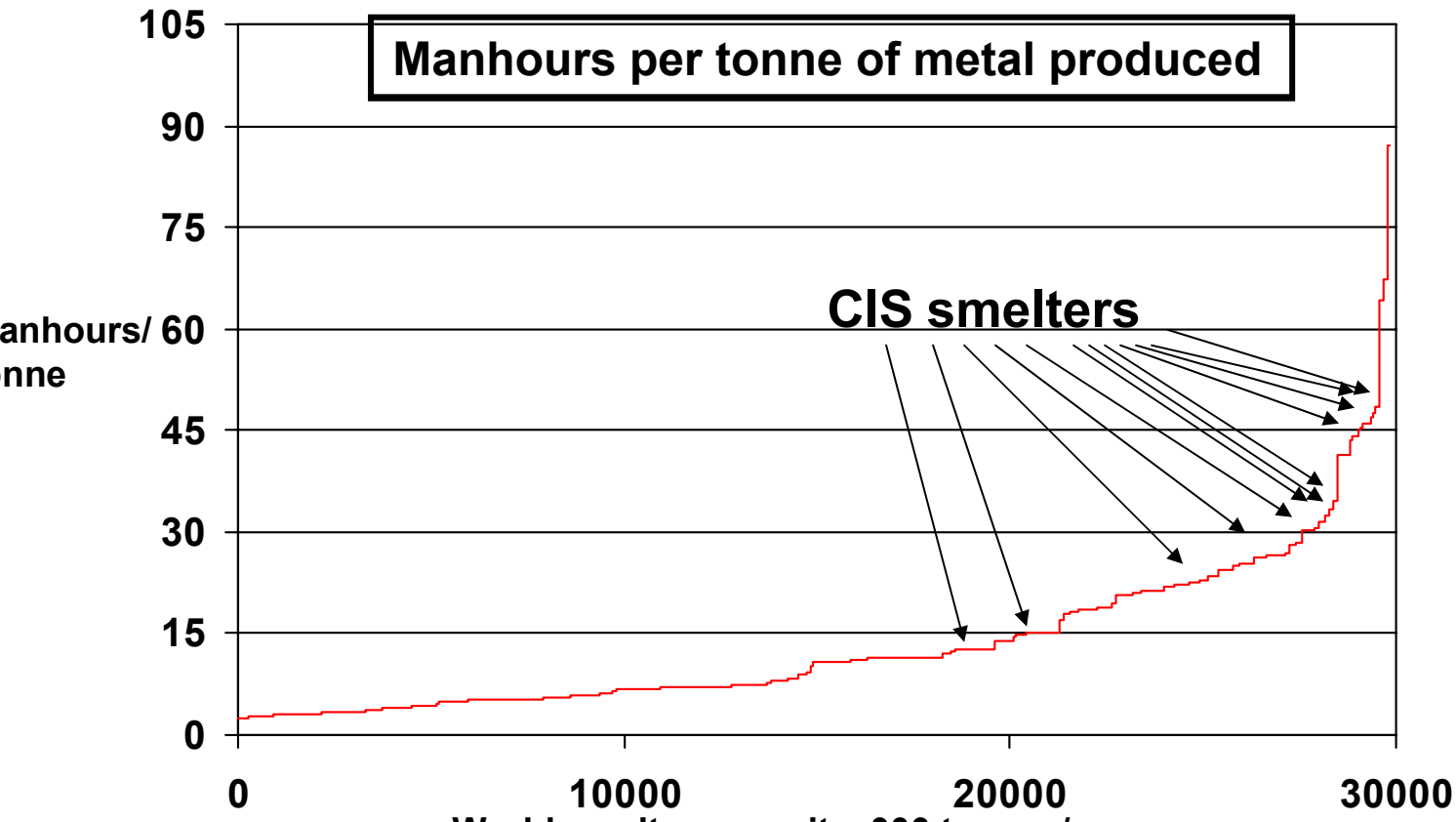
- Wage rates and labour productivity
- Power tariffs and power consumption
- Alumina purchase costs and delivered alumina costs
- Transport costs

We can separate out:

- external factors of natural endowment and market prices
- internal factors of efficiency and technology

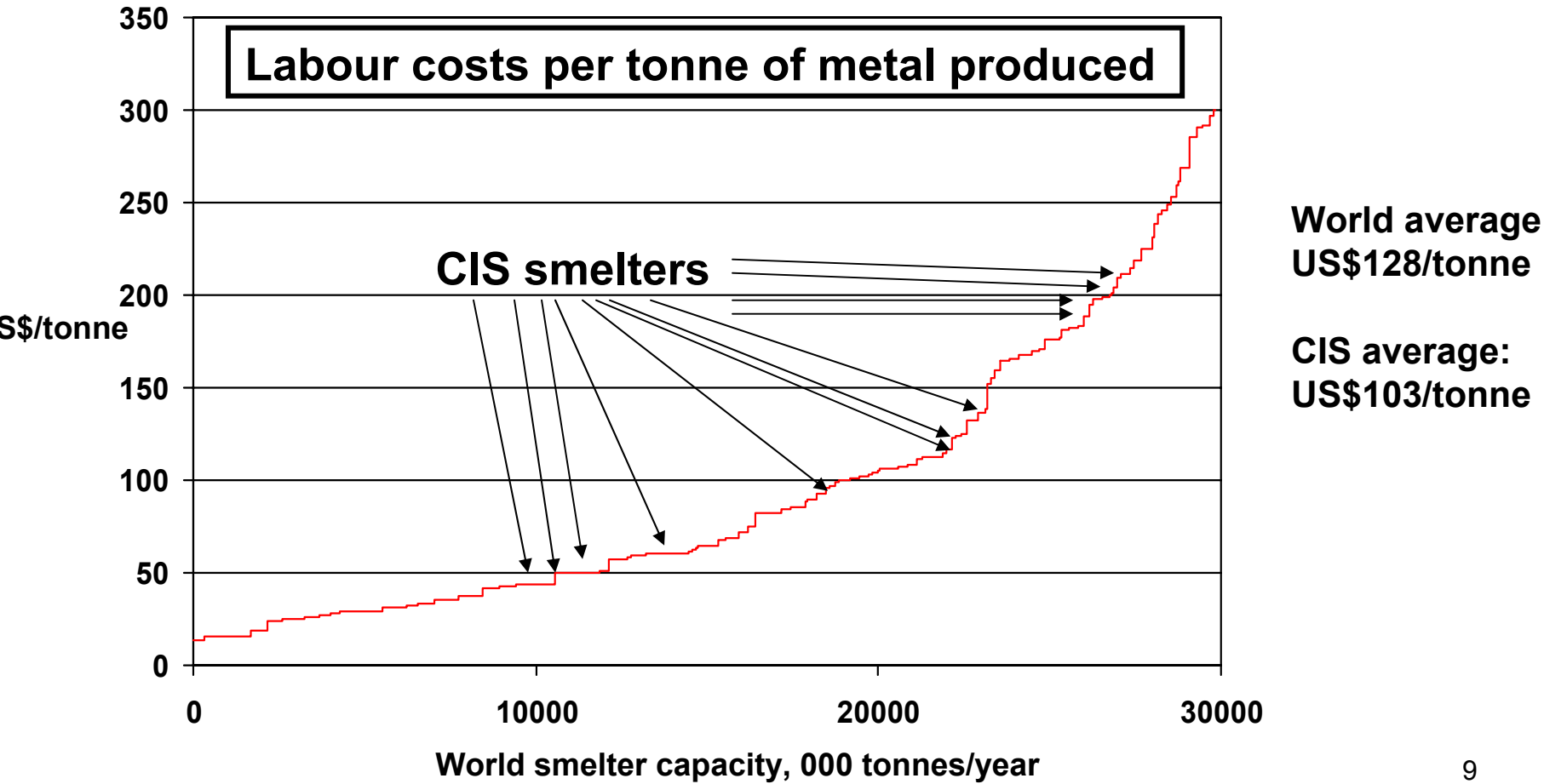


Apart from two large smelters, labour productivity at CIS smelters is among the worst in the world smelting industry . . .



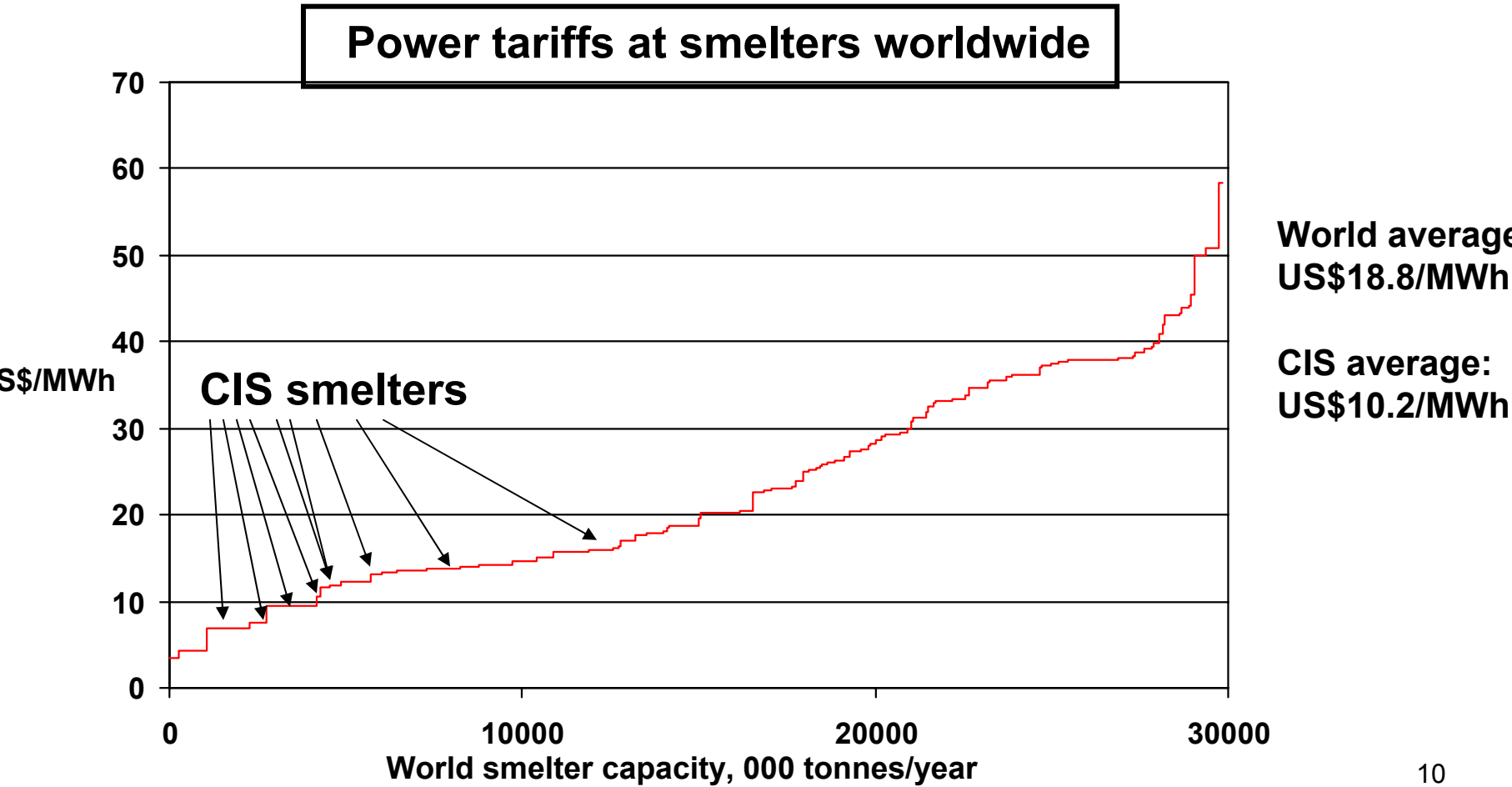


. . . but low wage rates and weak currencies bring labour costs per tonne down to the middle of the curve





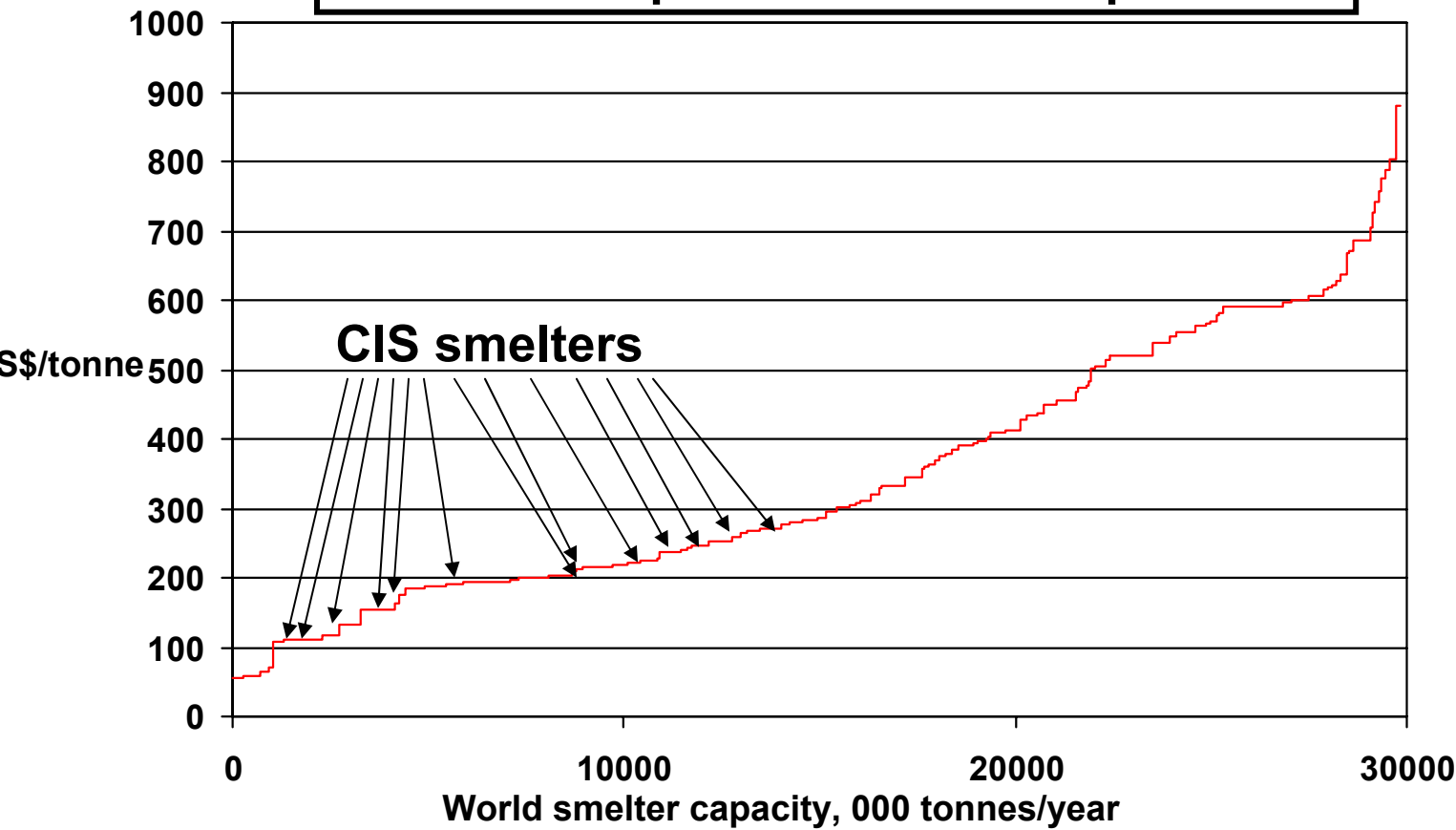
The price of electric power is a major competitive advantage at CIS aluminium smelters . . .





... which is only slightly diluted by above average consumption of power per tonne

Power costs per tonne of metal produced

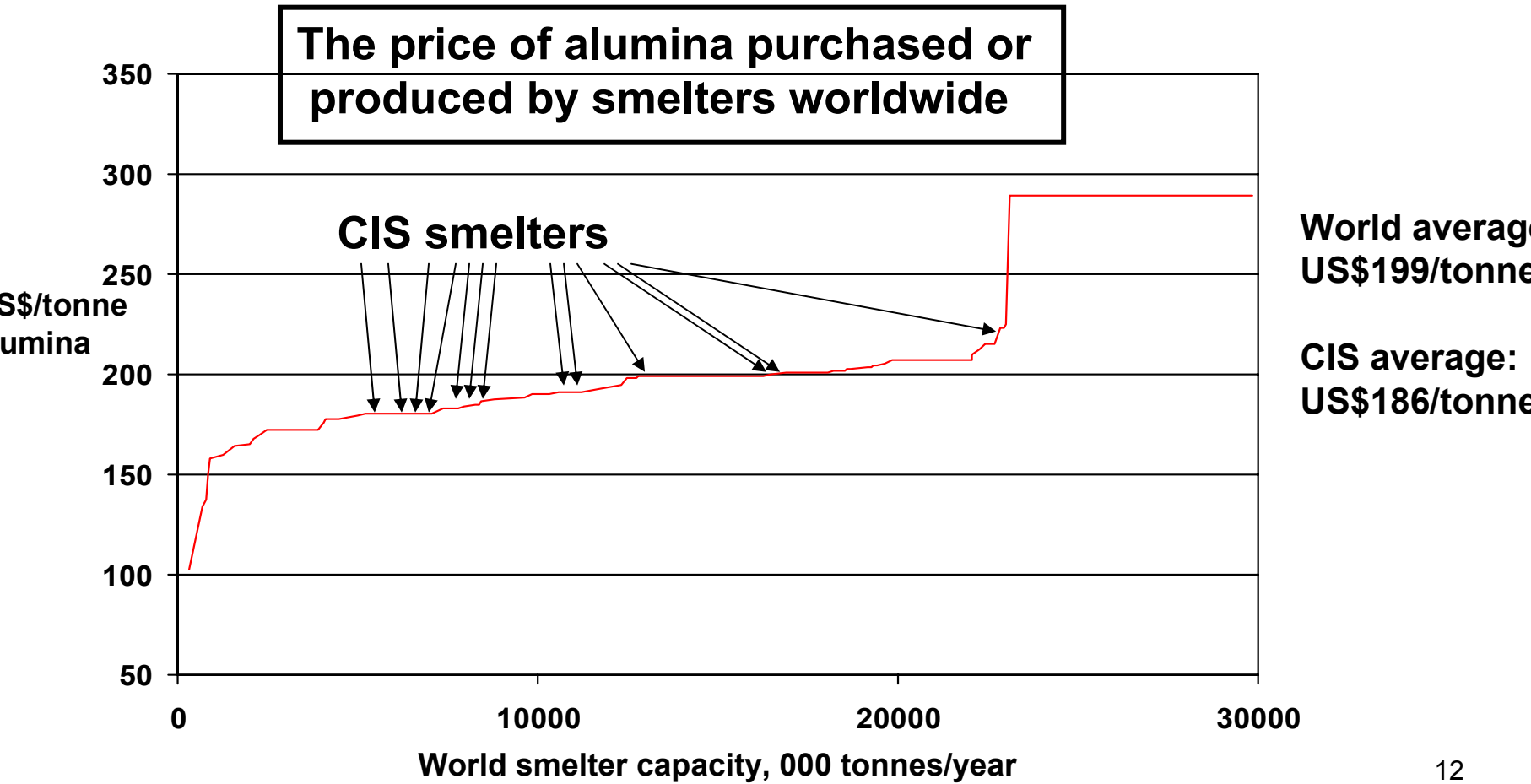


World average
US\$337/tonne

CIS average:
US\$164/tonne

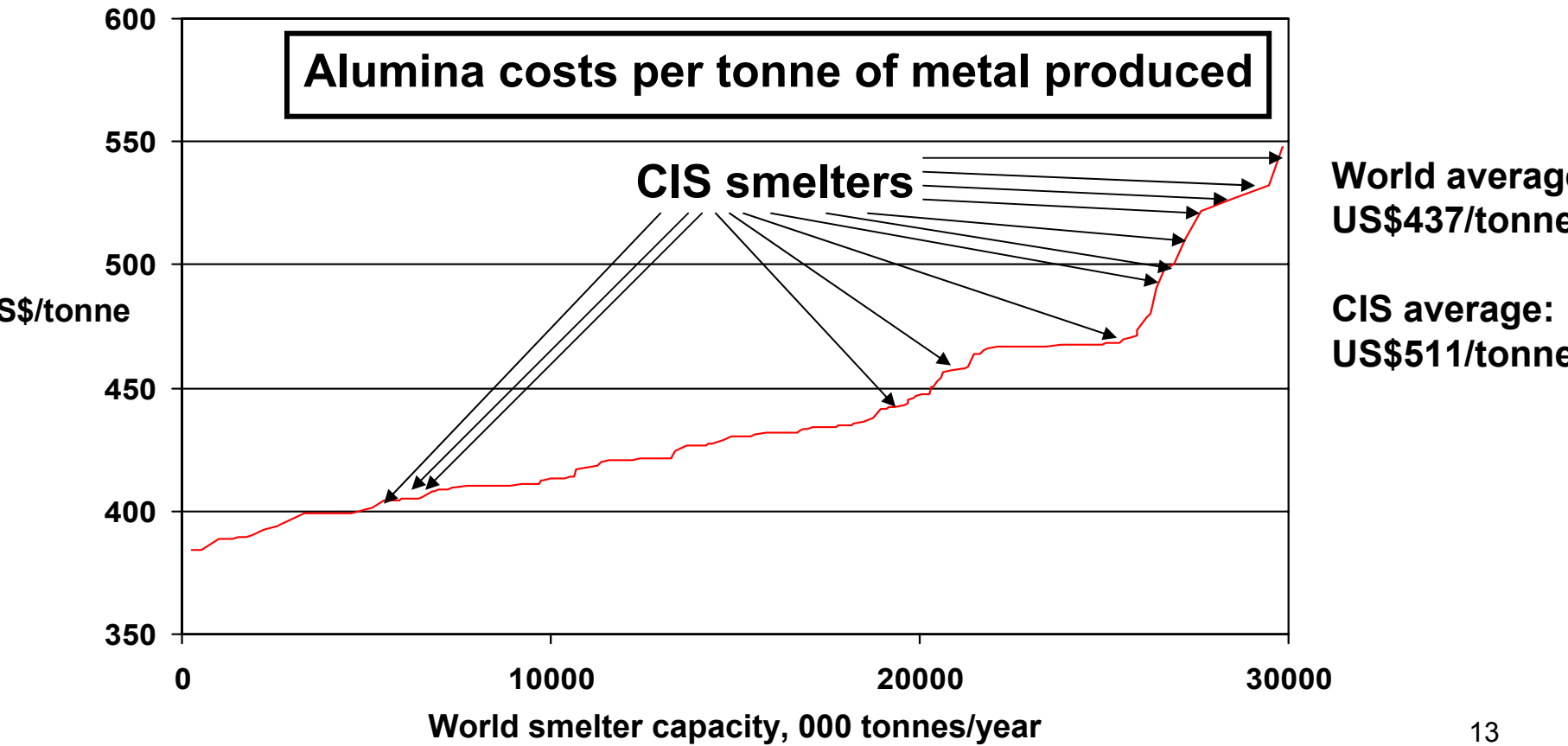


CIS smelters buy alumina at or below average prices on an fob basis . . .



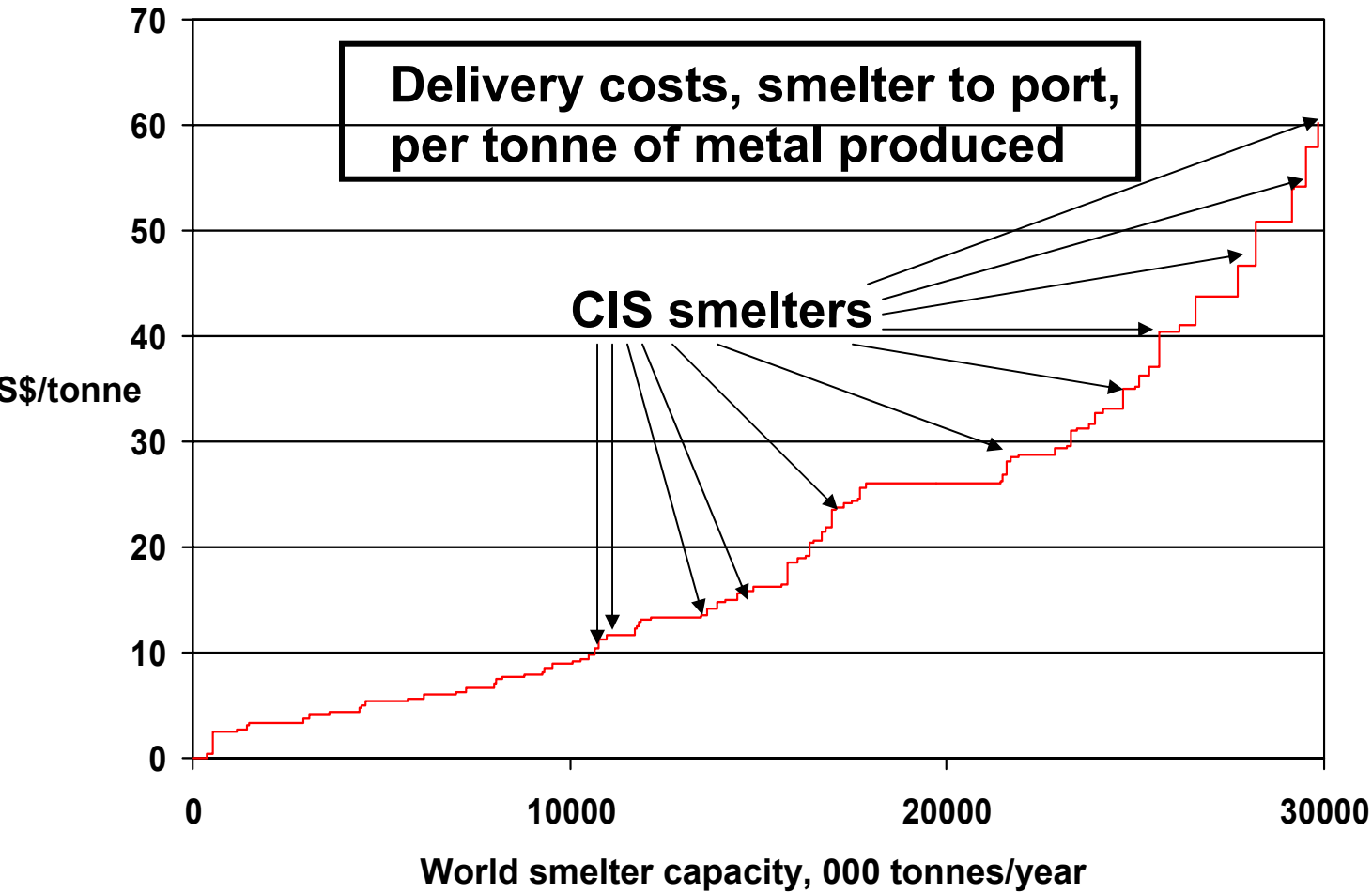


... but delivered alumina costs are very high because of freight, port and rail costs to smelters in Siberia and the Urals





Location also leads to high delivery costs for metal, particularly for smelters in Siberia





The major strengths of the Russian smelting industry arise from external factors, while the weaknesses are internal

External, non-controllable factors:

- Strengths
 - Power supply and price
 - Labour costs and skills
- Weaknesses
 - Bauxite and alumina supply and price
 - Location and freight costs, for alumina and metal

Internal, controllable factors:

- Strengths
 - Commitment of the labour force
- Weaknesses
 - Soderberg technology
 - Technical efficiency v. comparable Western plants
 - Over-manning
 - Bad environmental standards
 - Low investment in sustaining capital
 - Influence of out-dated standards 15



Strategies adopted by the major producers are mainly aimed at addressing external weaknesses, or capturing external strengths

- Reduce dependence on imported alumina:
 - Rusal is bidding \$295m for 65% of Alpart refinery in Jamaica
 - Rusal plans to double capacity of Friguia refinery in Guinea to 1.4 mtpy
 - Sual's Timan integrated bauxite/alumina project
- Acquire integrated power supply:
 - Rusal aims to purchase Siberian hydro power stations (but there is political opposition to this)



There has also been some investment directed at internal weaknesses:

- Replacement of Soderberg by pre-bake lines at Krasnoyarsk and Urals smelters
- Sayansk smelter expansion, and casthouse development
- Krasnoyarsk: investment in
 - Dry paste plant
 - Dry scrubbers on two potlines
 - Some computerised pot controls



The outlook for competitiveness at the CIS smelters

- Advantages:
 - Power cost advantage at major Siberian smelters is worth c. \$190/tonne of aluminium v. average world smelters; likely to be a long term advantage
 - Labour costs: low but likely to rise; likely to remain a comparative advantage
- Disadvantages:
 - Alumina supply: ocean freight, handling and rail freight can add c. \$100/tonne to aluminium costs, compared to typical Western plants
 - Delivery costs to export markets, and reliance on ingot rather than billet or slab; permanent

Compared to average world costs, the lowest cost Russian smelters have a net cost advantage, but it is not permanent. Compared to new smelters with low cost power, Russian plants have higher costs



Our cost reduction work with Russian companies indicates that there is large scope for further improvement

Technical improvements:

- Alumina quality
 - Coke and pitch quality
 - Anode specifications and butts cleaning
 - Point feeding of alumina
 - Dry scrubbing
 - Automated stud pulling
 - Casthouse improvements
- **Benefits include improved current efficiency, reduced raw material consumption, higher metal production and lower production costs**



Equally important is a change to a value-based management system

- Simplify management structures and reporting systems
- Management information systems should focus on generating value:
 - Measure performance
 - Emphasize customers' needs
 - Set correct targets
 - Provide incentives
- Up-date raw material specifications
- Aim at continuous improvement, and not just adherence to long-established standards



The semi-fabricating industry: different and more difficult problems

- Plants and equipment designed for military, rather than consumer end-uses
- Over-manning and high social costs
- Export potential is much smaller than in primary
- Collapse in domestic demand has reduced capacity utilisation
- Quality and service culture required
- Integration with primary production may not be the best strategy: major companies are focusing investment on upstream assets

... But the solutions can follow the same principles



Improving competitiveness in the semi-fabricating sector requires a new focus on producing what the markets wants

- Develop consumer-related products:
 - Beverage can sheet
 - Common alloy extrusions
 - Building sheet
- Specialist export products:
 - Hard alloy sheet, plate and extrusions
 - Industrial plate
- Rationalise production facilities
- Rationalise the non-production labour force
- Change management systems; continuous improvement in place of long-established standards



Summary: a competitive smelting industry, with great scope for further improvement

- Power costs will be a major and lasting advantage
- Labour skills are an advantage; management revolution is now needed
- Upstream integration, to secure raw materials
- Investment in smelting facilities to achieve continuous improvement in technical performance
- New market and product focus in the semi-fabricating sector
- Re-vitalised semis plants could be an export base for Europe

Strong cash flow now provides an important opportunity for vital investments to secure the future of the sector