

An analysis of ferrochrome input costs

Metal Bulletin Special and Stainless Steel Summit

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Our organisation

- Hatch supplies business, process and technology consulting, design and engineering and construction, operations and project management to the mining and metals, energy and infrastructure industries worldwide
- Established 1955 and employee owned
- Over 8000 highly skilled employees in 80 offices on six continents
- US\$20BN of capital projects now under management globally

Our values

- Safety
- Quality
- Innovation
- Sustainable development
- Effective risk management

We deliver unprecedented and sustained results for our clients

HATCH

Hatch supplies a complete range of services covering the full scope of clients' activities from corporate level to floor level

Corporate level

Corporate strategy, project due diligence, pre-feasibility and feasibility studies, corporate financial advisory and transaction execution services

Business level

Business strategy, business planning, project due diligence, pre-feasibility and feasibility studies, market studies, cost and financial analyses

Plant level

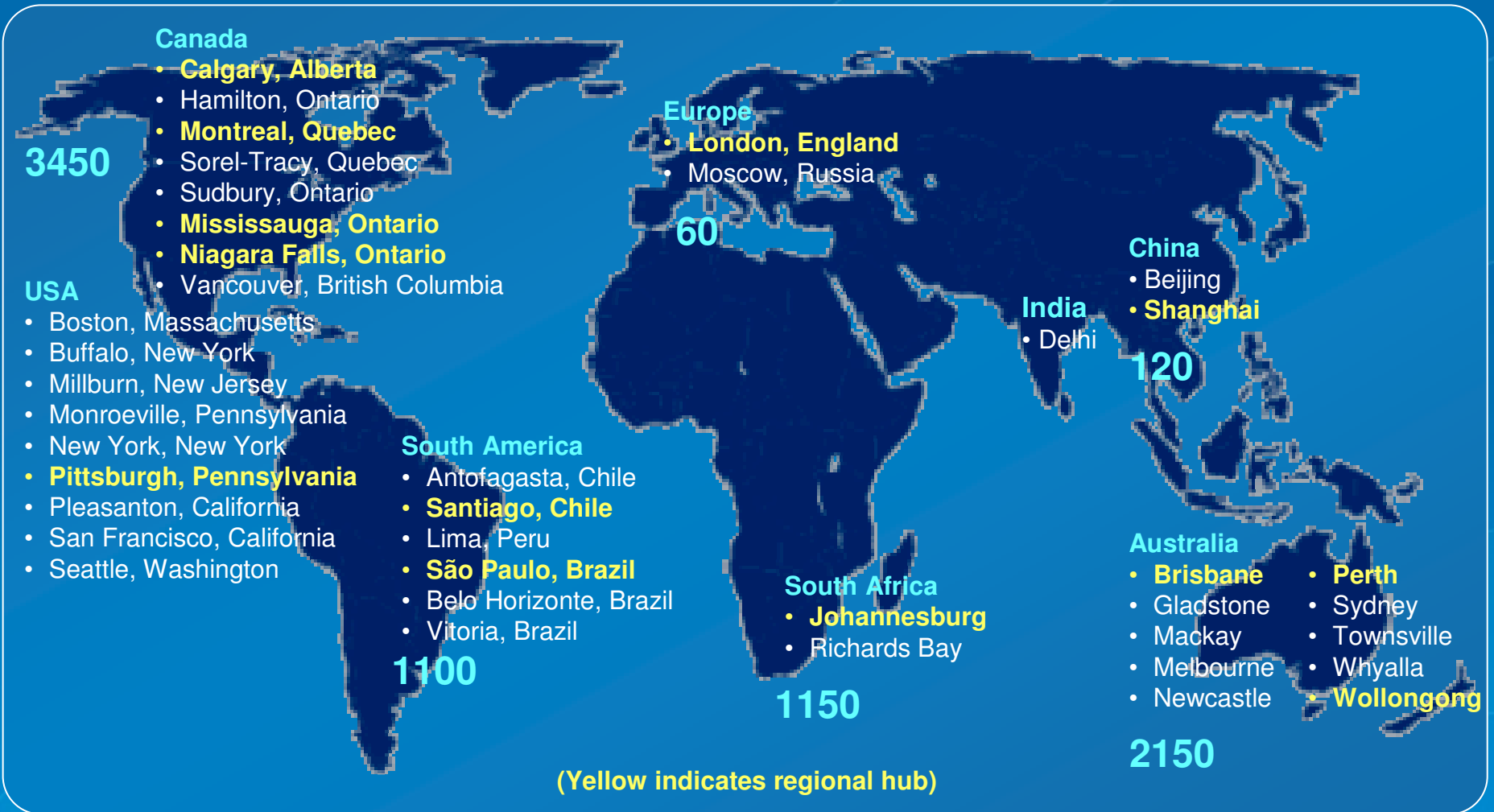
Benchmarking, competitor profiling, cost studies, operations management and support

Floor level

Control systems, operating floor assistance, operator training

Global reach and resources

8000 people – November 2008



Hatch Beddows is the leading strategy consulting service specialising in the global steel and related industries

- **Hatch Beddows** has unrivalled experience in the global iron, steel and related industries. We combine creativity, intellectual rigour and in-depth industry knowledge supported by Hatch's global reach and resources – 8000 high skilled people in 80 countries worldwide
- **Hatch Beddows** provides the following suite of services to its clients worldwide
 - Corporate strategy development
 - Business unit strategy development
 - Corporate development and restructuring
 - Competitive analysis and marketplace positioning
 - New product and market development
 - Investment analysis
 - Market analysis
 - Business planning

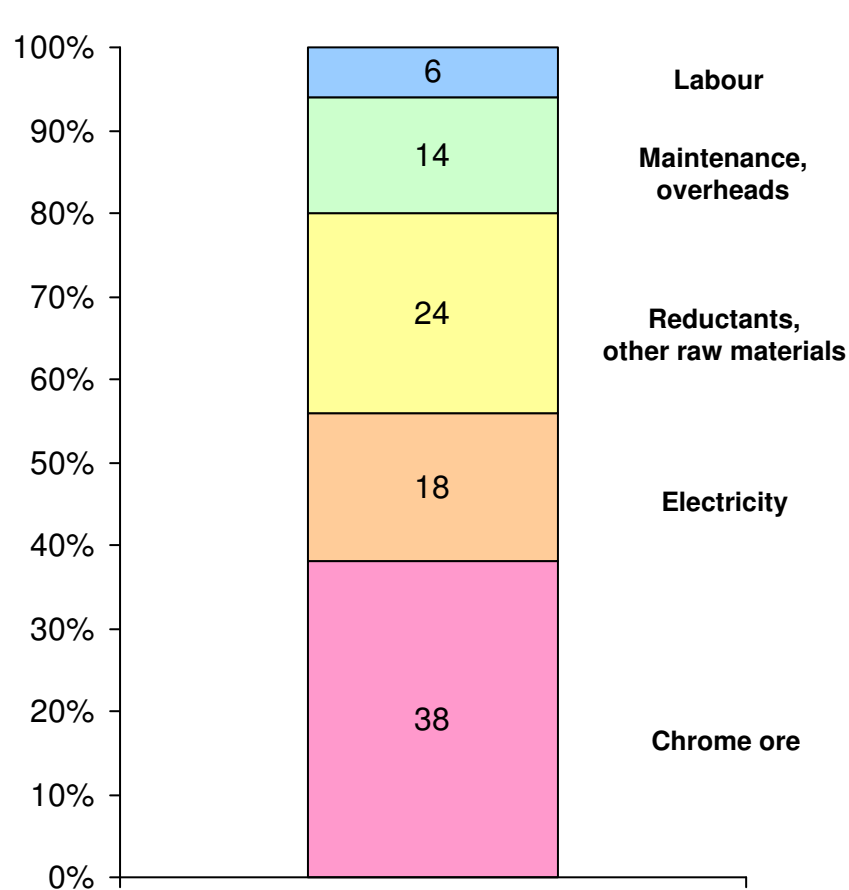
Hatch Beddows brings together a unique combination of commercial and technical knowledge and expertise to provide unparalleled benefits for its clients

Hatch Beddows' project experience spans the whole of the value chain from raw materials to finished steel to processed products for a comprehensive perspective

- **Raw materials and consumables**
 - Iron ore, pellet and sinter
 - Coking coal and coke
 - Metallics: scrap, pig iron, DRI / HBI
 - Ferroalloys: Cr, Mn, Ni, Si
 - Refractories
- **Semi-finished steel**
 - Slab
 - Billet and bloom
- **Long products**
 - Rebar
 - Merchant bars
 - Structural sections
 - Wire rod and wire products
 - Engineering bars
 - Rails
 - Grinding balls
- **Reversing mill / Steckel mill plate**
- **Strip mill products**
 - HR sheet / plate
 - CR sheet
 - Electrical steels
 - Galvanised sheet
 - Organic coated sheet
 - Tin mill products
 - Tailor-welded blanks
- **Pipe and tube**
 - OCTG and line pipe
 - Seamless and welded tubes
 - Hollow sections
- **Stainless steel**
- **Speciality steels and special metals**

An analysis of ferrochrome input costs

Chrome ore and electricity costs typically account for over half of FeCr production costs although the sharp rise in coke prices since early 2007 has changed this relationship

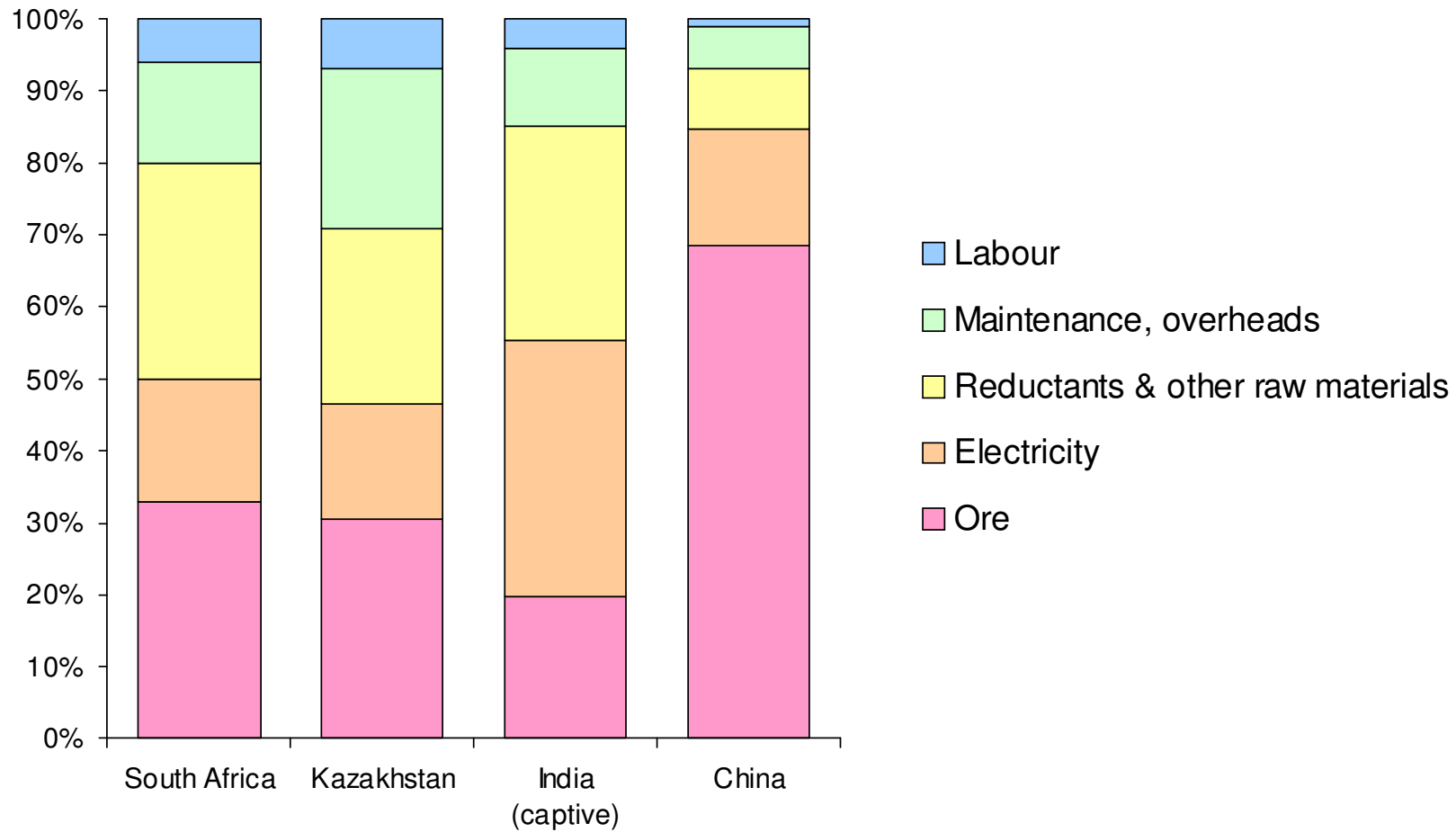


- Chrome ore and electricity costs typically account for just over half of total ferrochrome production costs
- Ferrochrome production a very energy-intensive process. An average of 4,000kWh/tonne of FeCr produced
- The sharp increase in coke prices since early 2007 have led to reducing materials becoming the second most-important input cost during 2008
- These costs set to fall, however, given the 30% fall in Chinese coke prices since August
- Ferrochrome typically produced in low-wage economies (Scandinavia excepted). Problem is scarcity of skilled labour rather than price

Source: Hatch Beddows

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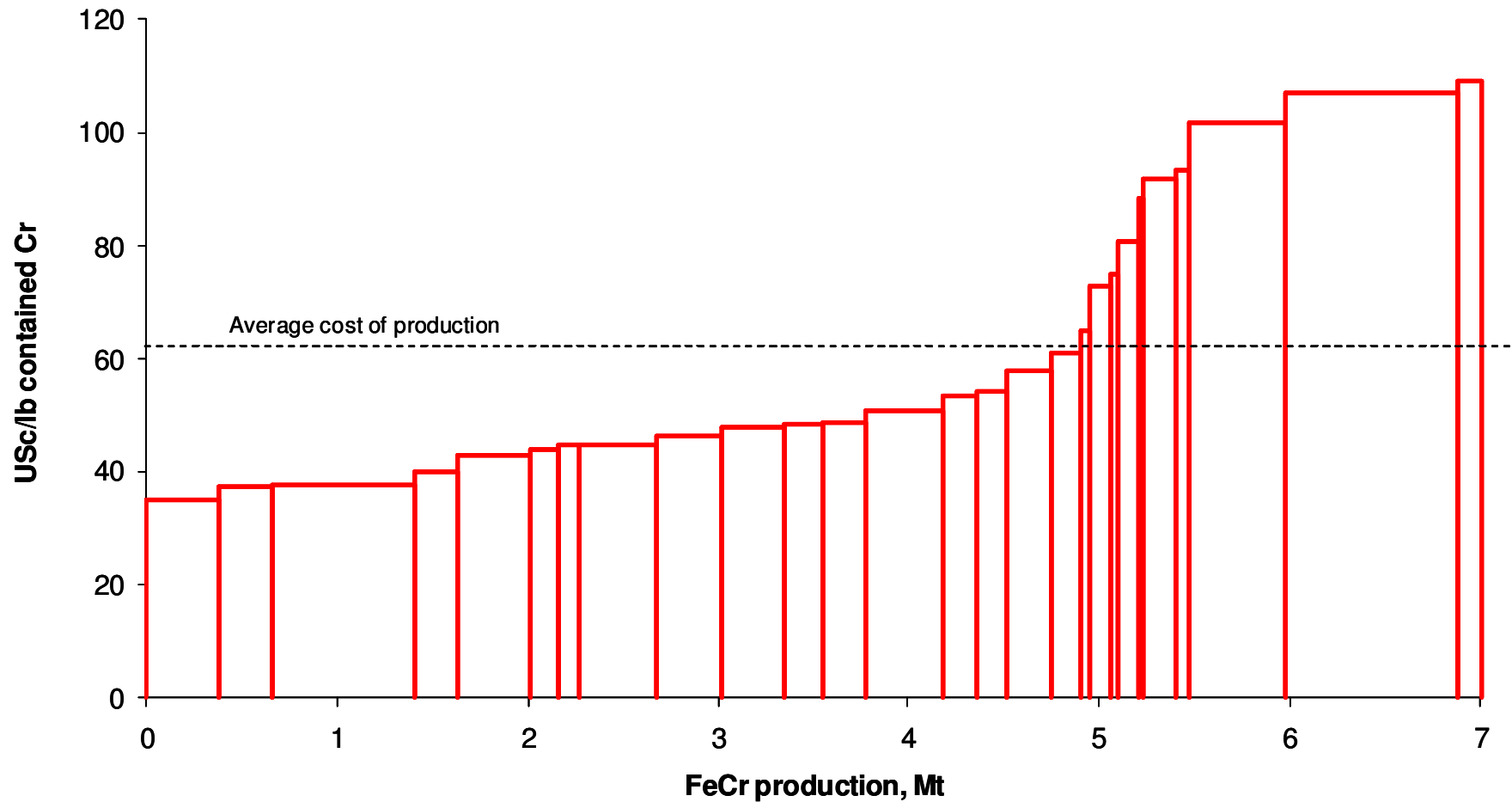
The importance of input costs varies with the integration levels of FeCr producers. Those with captive chrome ore perform better than those without



Source: Hatch Beddows

An analysis of ferrochrome input costs

The marginal cost of production during 2007 reached a high of nearly 110c/lb, up from a marginal cost of production of just 40c/lb in 2001

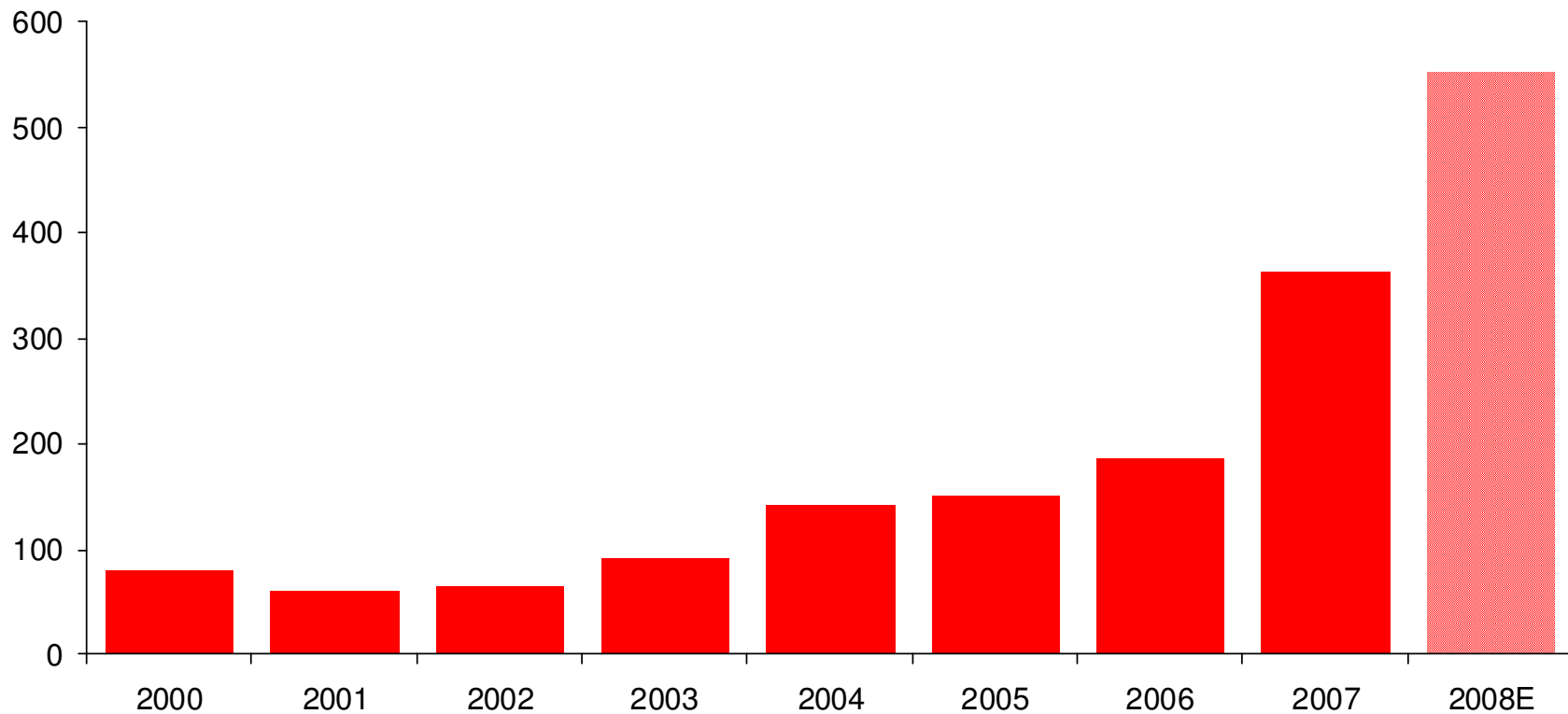


Source: Hatch Beddows

An analysis of ferrochrome input costs

Rising merchant chrome ore costs have had the most significant impact on non-integrated FeCr producers in countries such as China

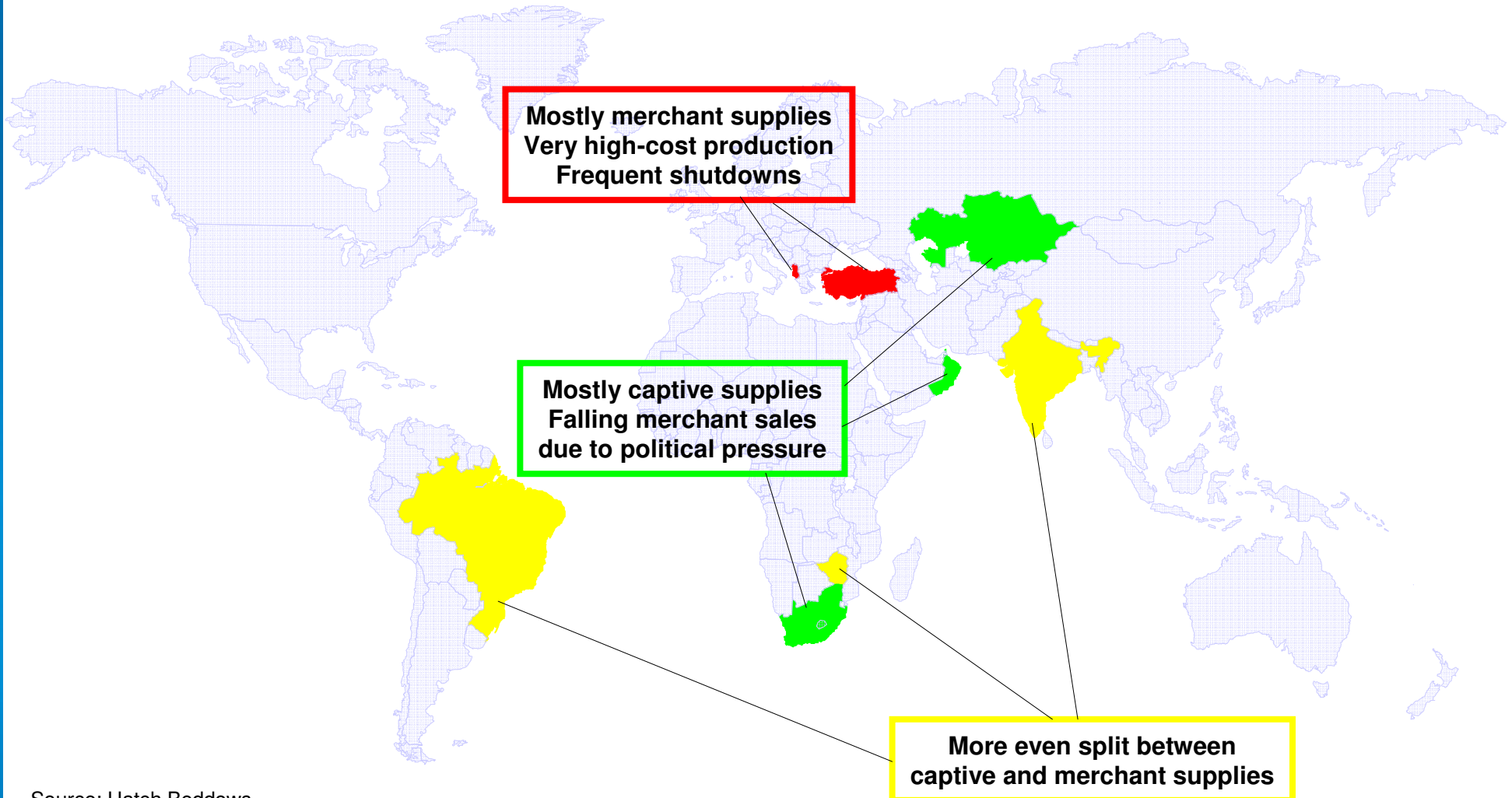
Turkish chrome ore prices (44% CR₂O₃) cif China, \$/t



Source: Hatch Beddows, Ryan's notes

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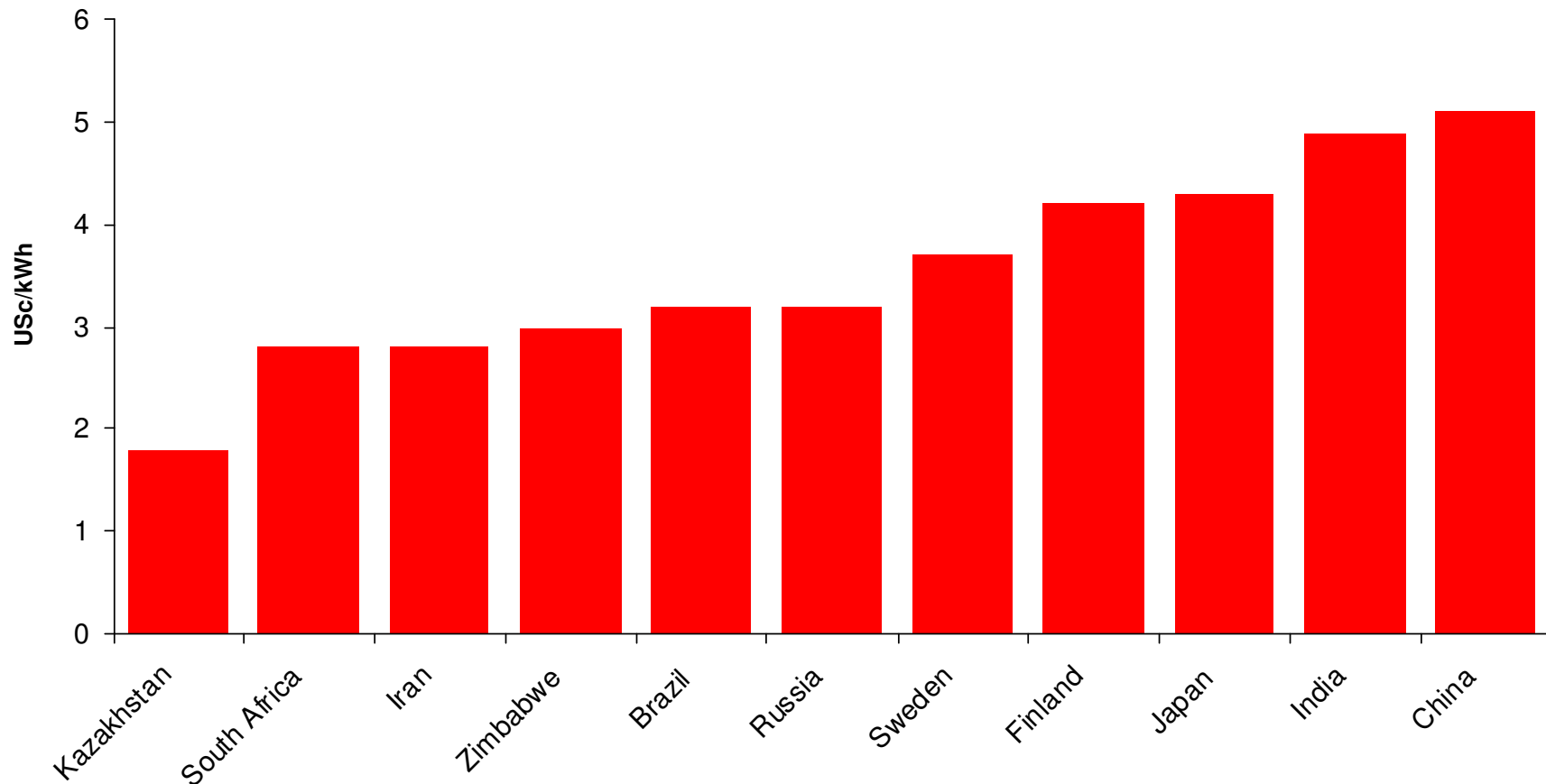
In the long term, merchant chrome ore is likely to become more expensive as it is increasingly being sourced from countries with high production costs



Source: Hatch Beddows

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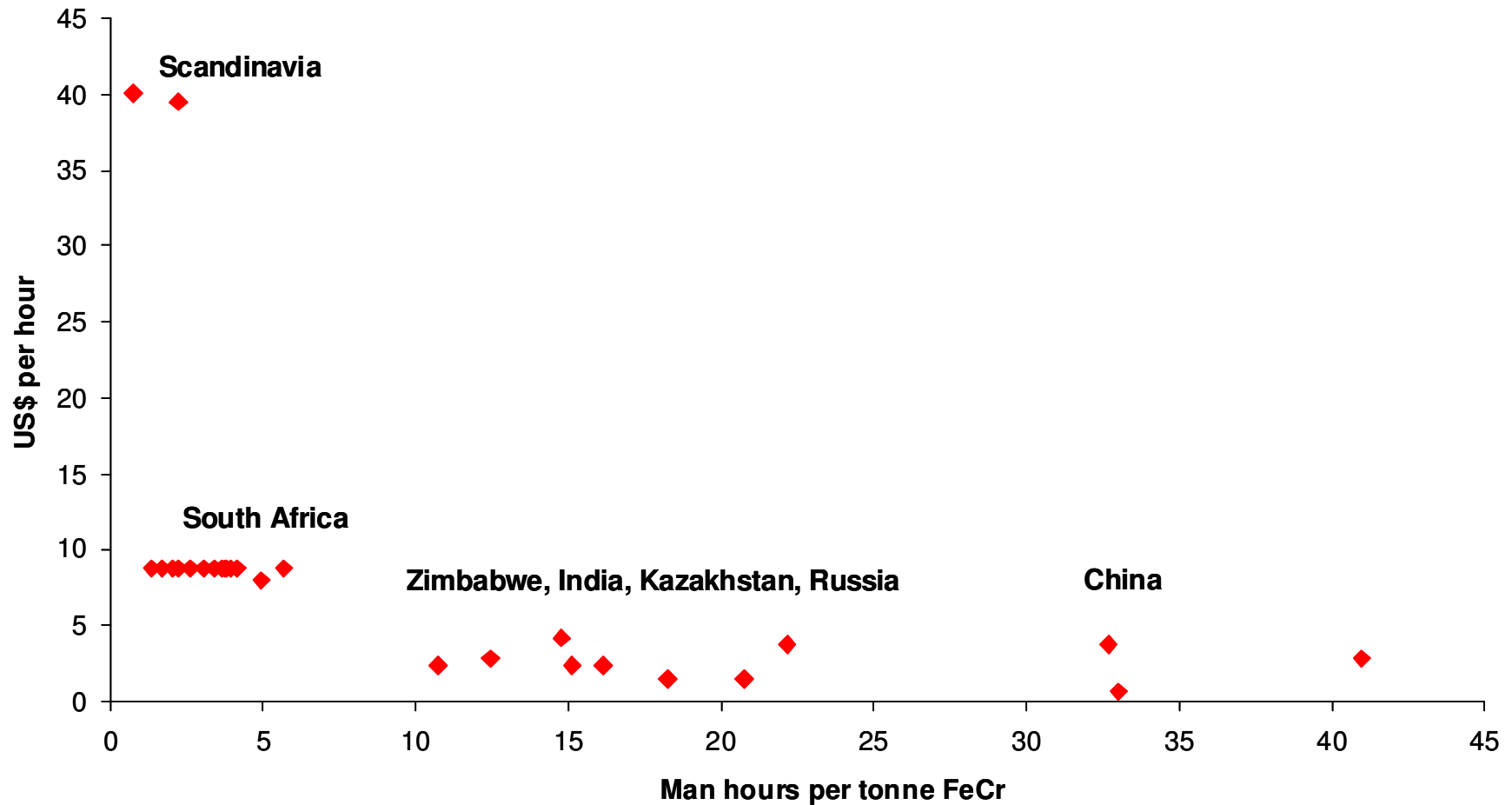
Kazakhstan enjoys some of the lowest electricity costs in the world. Producers in South Africa are likely to see the most noticeable change in the coming years as the country increasingly moves away from very cheap electricity costs



Source: Hatch Beddows, Xstrata-Merafe

An analysis of ferrochrome input costs

South African producers typically enjoy the most optimal balance between wage costs and productivity



Source: Hatch Beddows

An analysis of ferrochrome input costs

Rising coke and oil prices since early 2007 had a dramatic impact on chrome ore mining costs and FeCr production costs earlier this year



Source: Hatch Beddows, SBB, EIA

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