

CIS Ferroalloys Industry Current Profile and Future Potential

21st International Ferro-alloys Conference

15th November 2005



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Hatch Associates - London

Hatch Beddows

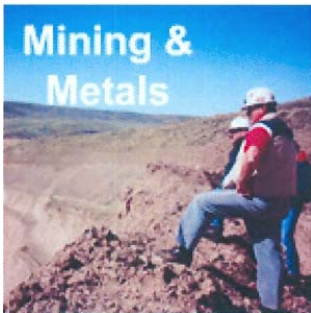
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- The Hatch Group, Hatch Consulting and Hatch Beddows
- CIS ferroalloys industry profile
- CIS steel industry potential and implications for ferroalloys
- CIS countries as a location of choice for ferroalloys production
 - Strengths, weaknesses, opportunities and threats
- Concluding remarks

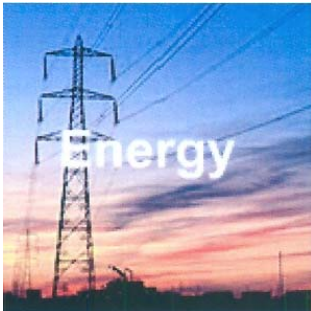
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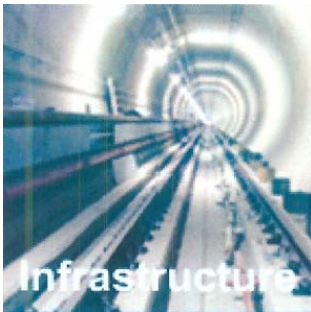
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- Head office in Mississauga, Canada
- Committed to quality: ISO 9001 certified
- \$15BN of projects currently under management



**We deliver unprecedented and sustained
business results for our clients**

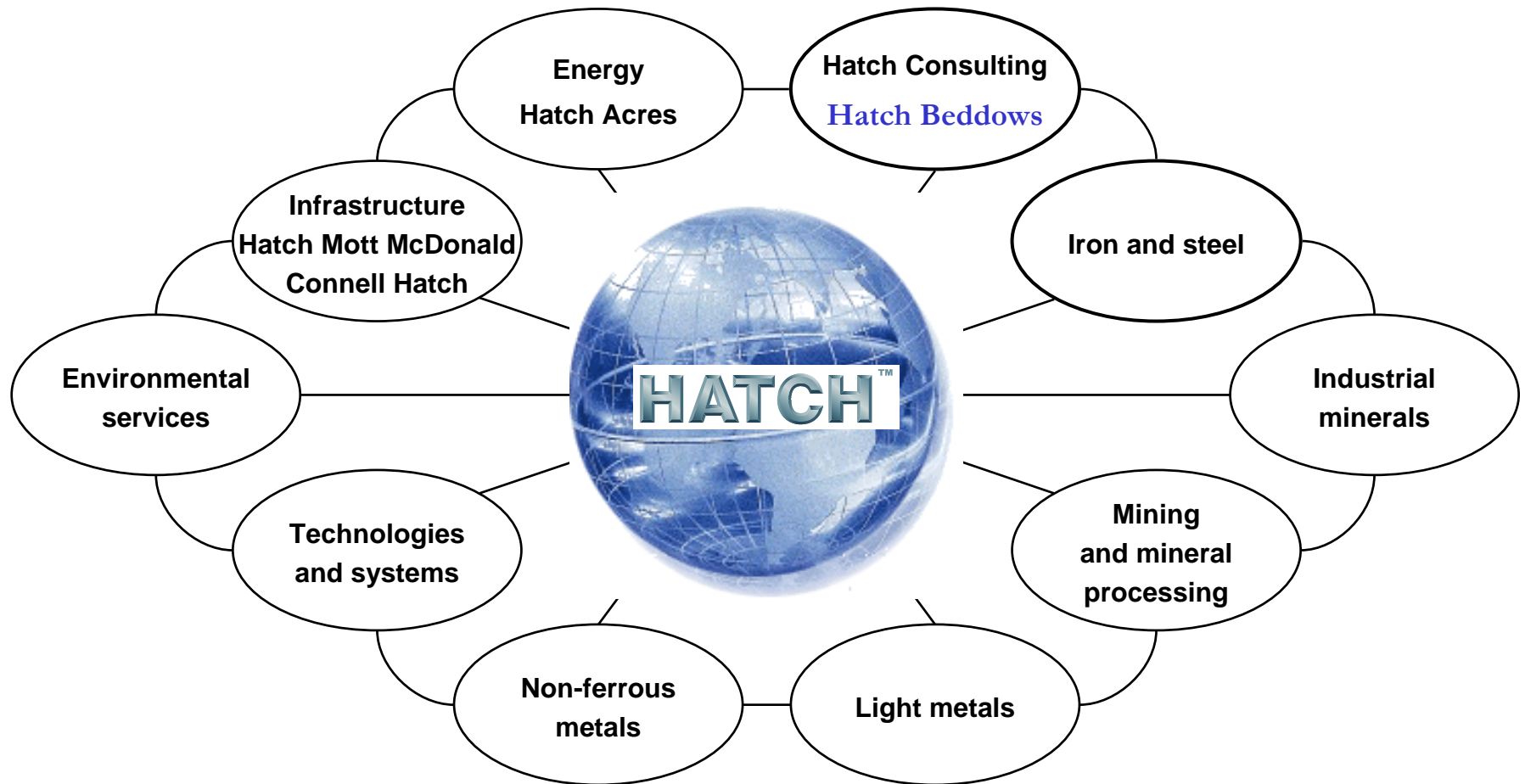
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The Hatch Group is organised into industry focused business units



Hatch Consulting is the leading management consultancy specialising in the mining and metals industries

- Hatch Consulting is organised into specialised practices
- **Hatch Beddows** provides strategy development and implementation, performance improvement and market appraisal services, specialising in the iron and steel and related industries
- **Investment & Business Planning** provides economic, environmental and technical evaluation of mineral properties and processing facilities, due diligence studies, pre-feasibility and feasibility studies and related investment planning and appraisal services
- **HB Advisers**, a joint venture company, provides corporate finance advisory and transaction execution services

Hatch supplies its full range of services to the ferroalloys industry

Strategic planning, due diligence and feasibility studies, market research and reports

Client	Project	Location
EBRD	Technical report on chromite mining and ferrochrome production facilities	Kazakhstan
Government agency	Report on environmental regulation and engineering design of ferroalloys plants	North America
Producer	Feasibility study for a new integrated ferroalloys production facility	Confidential
Steelmaker	Strategic study of investment opportunities in the CIS	CIS region

Design and engineering, project and construction management, operations support

Client	Project	Location
Cerro Matoso	Ferronickel smelter expansion project	Colombia
Eramet	Preliminary engineering for a ferromanganese / manganese oxygen refining facility	USA
Sabayek	New ferroalloys production complex	Saudi Arabia
Samancor	EPCM for the Tubatse ferrochrome pelletising and sintering plant	South Africa

Hatch can supply a unique combination of commercial and technical services

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The CIS ferroalloys industry is based on 11 plants in four countries

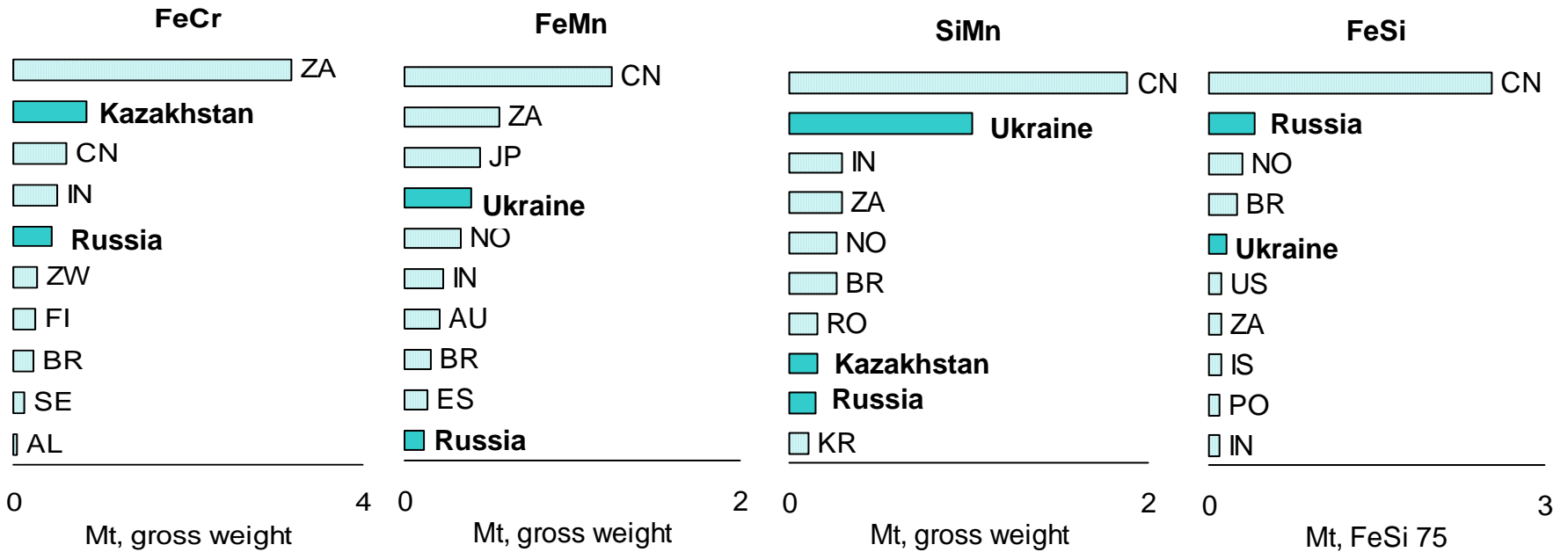
CIS principal ferroalloys plants

Company	Plant and location	Furnaces		Ferroalloys			
		No.	MVA	FeCr	FeMn	SiMn	FeSi
DCM	Zestafoni, Georgia	22	365		✓	✓	
Eurasian Natural Resources Corporation	Aksu, Kazakhstan	26	625	✓		✓	✓
	Aktobe, Kazakhstan	16	115	✓			
Interpipe	Nikopol, Ukraine	16	710		✓	✓	
IST Group	Bratsk, Russia	4	50				✓
Kermas Group	Serov, Russia	18	160	✓		✓	✓
MDM Group	Chelyabinsk, Russia	35	335	✓		✓	✓
	Kuznetsk, Russia	16	290				✓
Pryvat Group	Stakhanov, Ukraine	8	175			✓	✓
	Zaporizhy, Ukraine	14	335		✓	✓	
Stinol-Invest	Novolipetsk, Russia	2	30				✓

Source: Hatch Beddows field research. Note: Russian BF FeMn producers not listed

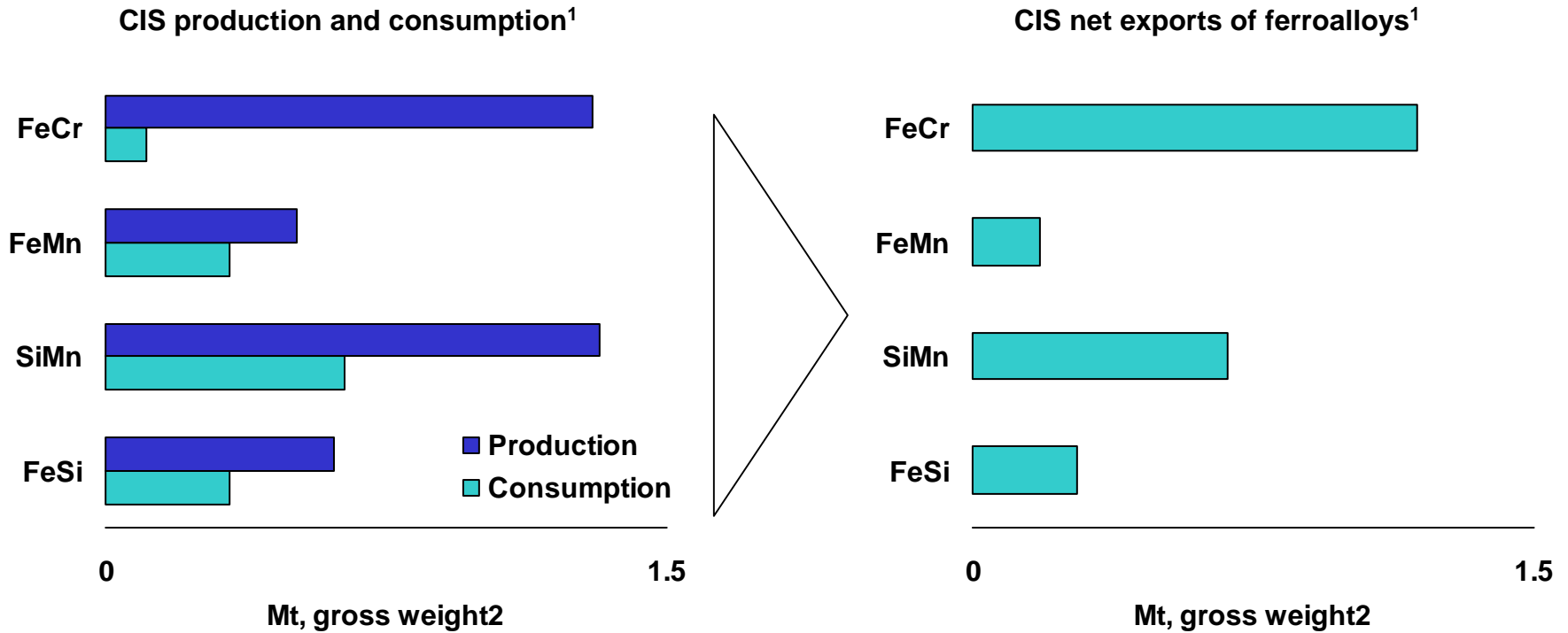
CIS countries are among the world's leading producers of chrome, manganese and silicon alloys

World ferroalloys top ten producer countries in 2004



CIS countries produced 3.8Mt of ferroalloys with a value of over US\$5BN in 2004

Much of the CIS region's ferroalloys output is exported

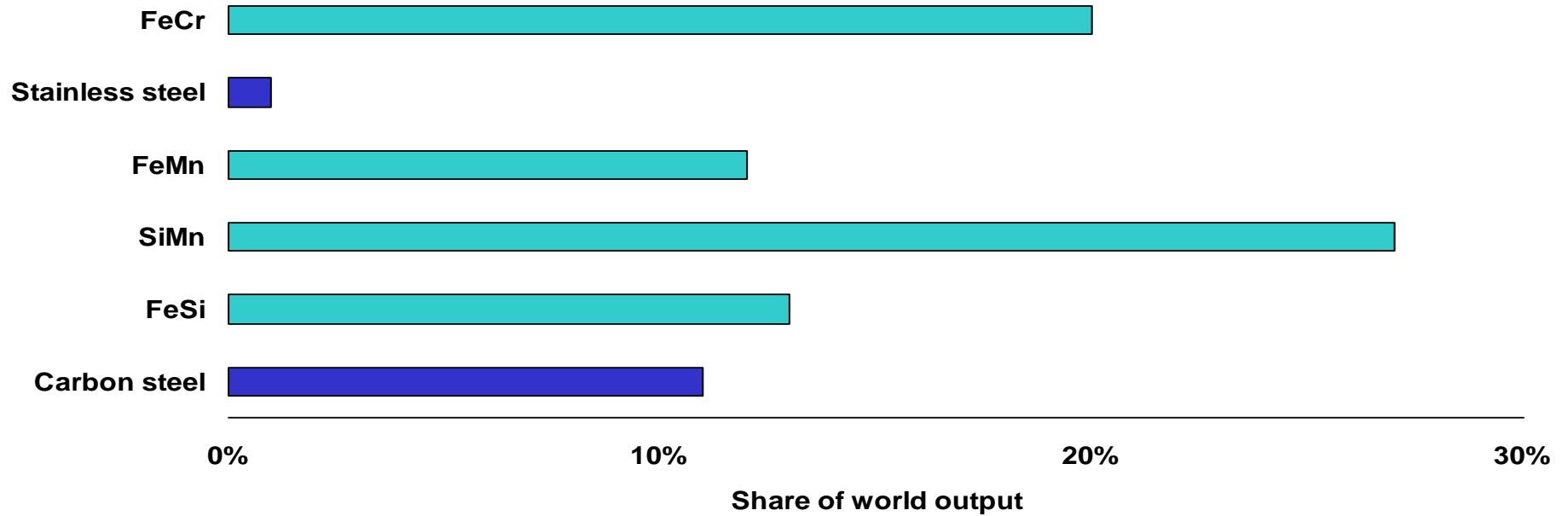


The CIS supplies ~2.5Mt of ferroalloys to world markets

Source: Hatch Beddows. Note: 1. 2004 data. 2. Except FeSi 75

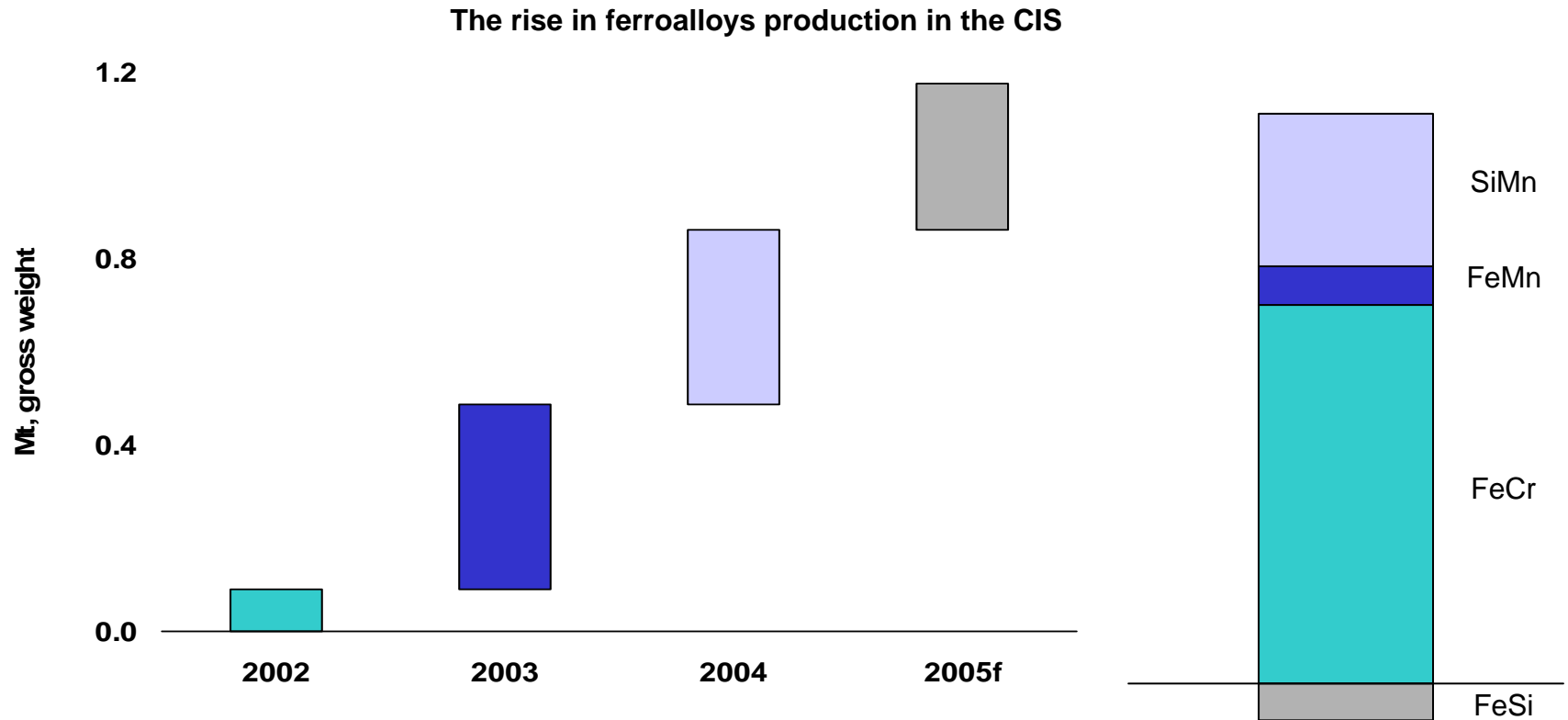
CIS countries have significant shares of world ferroalloys markets

CIS share of world steel and ferroalloys markets in 2004



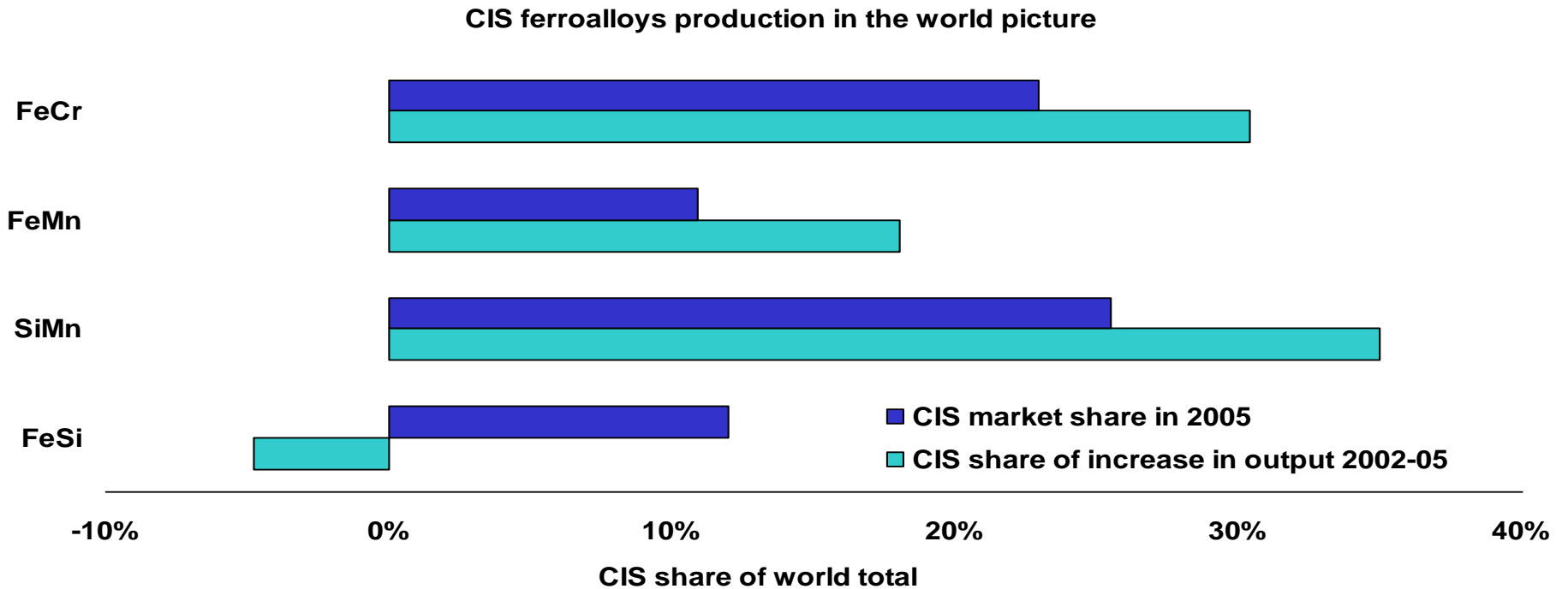
CIS countries supply proportionally more ferroalloys than steel to world markets

CIS ferroalloys production has risen by one third in three years, with over half of this increase coming in production of ferrochrome



Source: Hatch Beddows

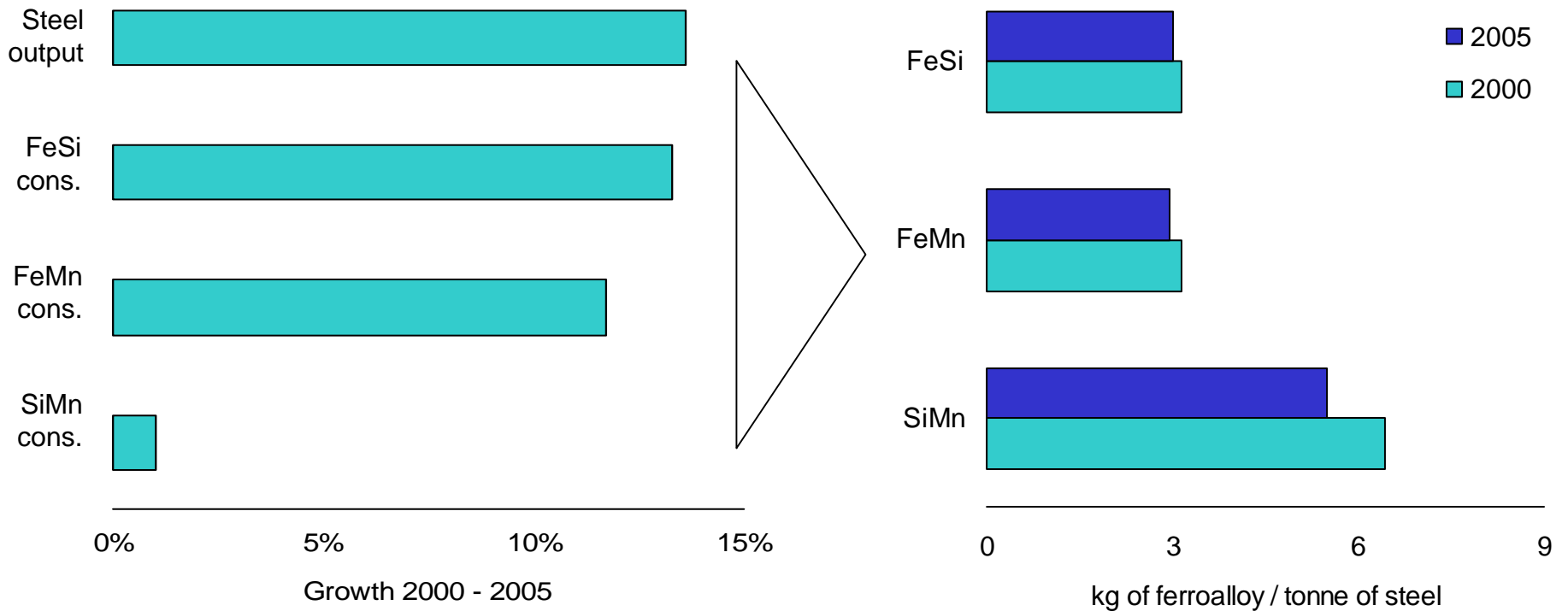
CIS ferroalloys producers have outperformed others in the production of chrome and manganese alloys in recent years



CIS contribution to increase in world output 30%. CIS market share 21% (exc. FeSi)

CIS steel output is up by more than ferroalloys consumption as process efficiencies in steelmaking improve

CIS crude steel production and ferroalloys consumption

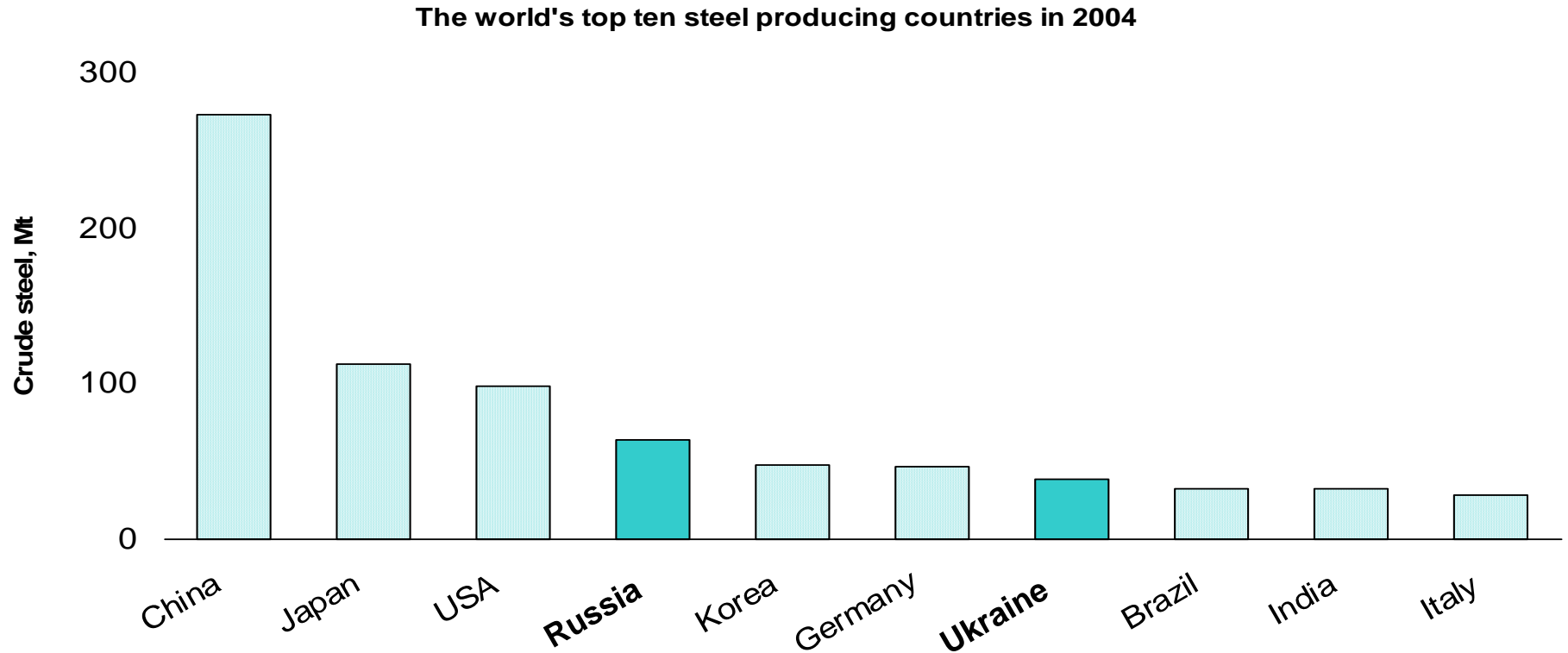


Source: Hatch Beddows

CIS ferroalloys industry: current profile and future potential

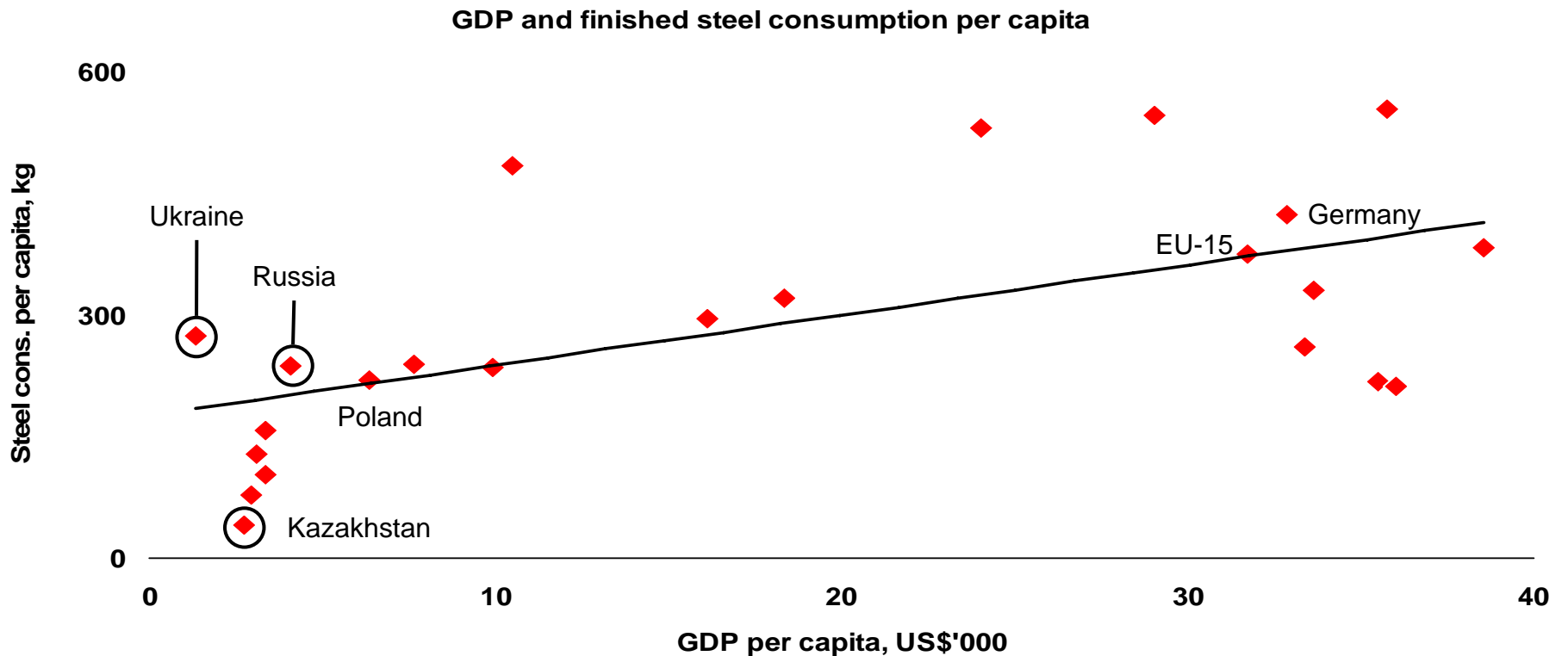
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CIS countries are among the world's leading steel producers



Source: Hatch Beddows, IISI

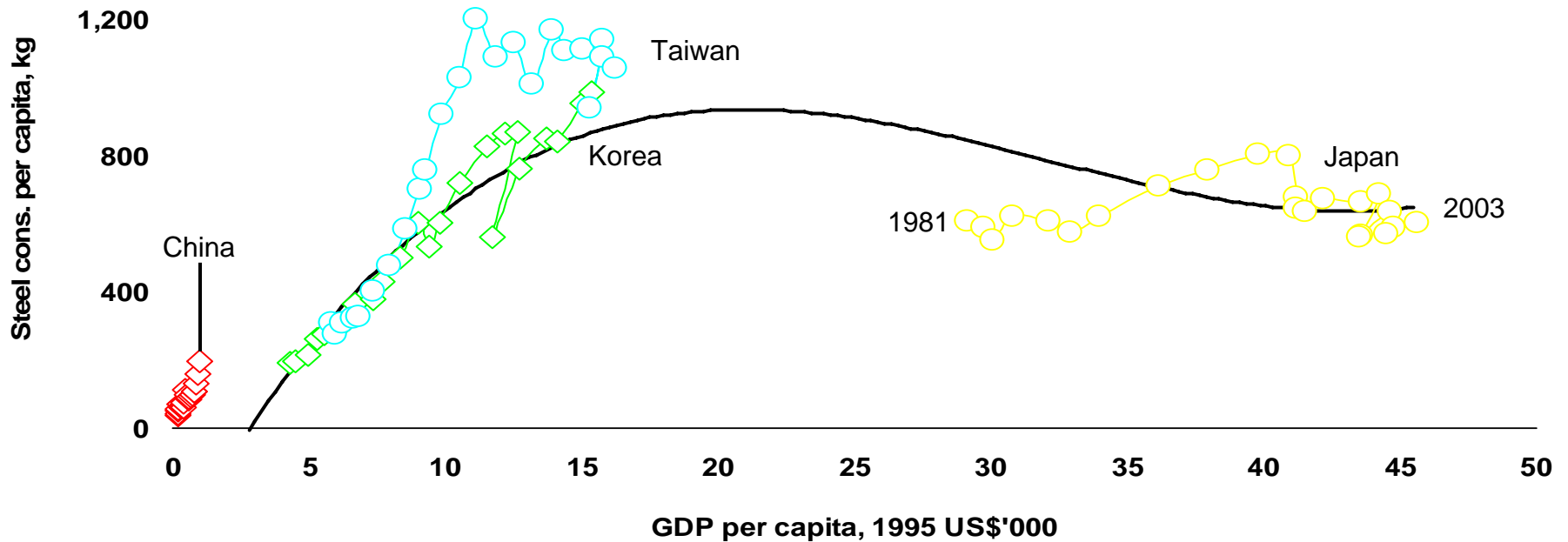
There is a clear relationship between average incomes and steel consumption



Source: Hatch Beddows, IISI, IMF, UN. Note: 2004 data

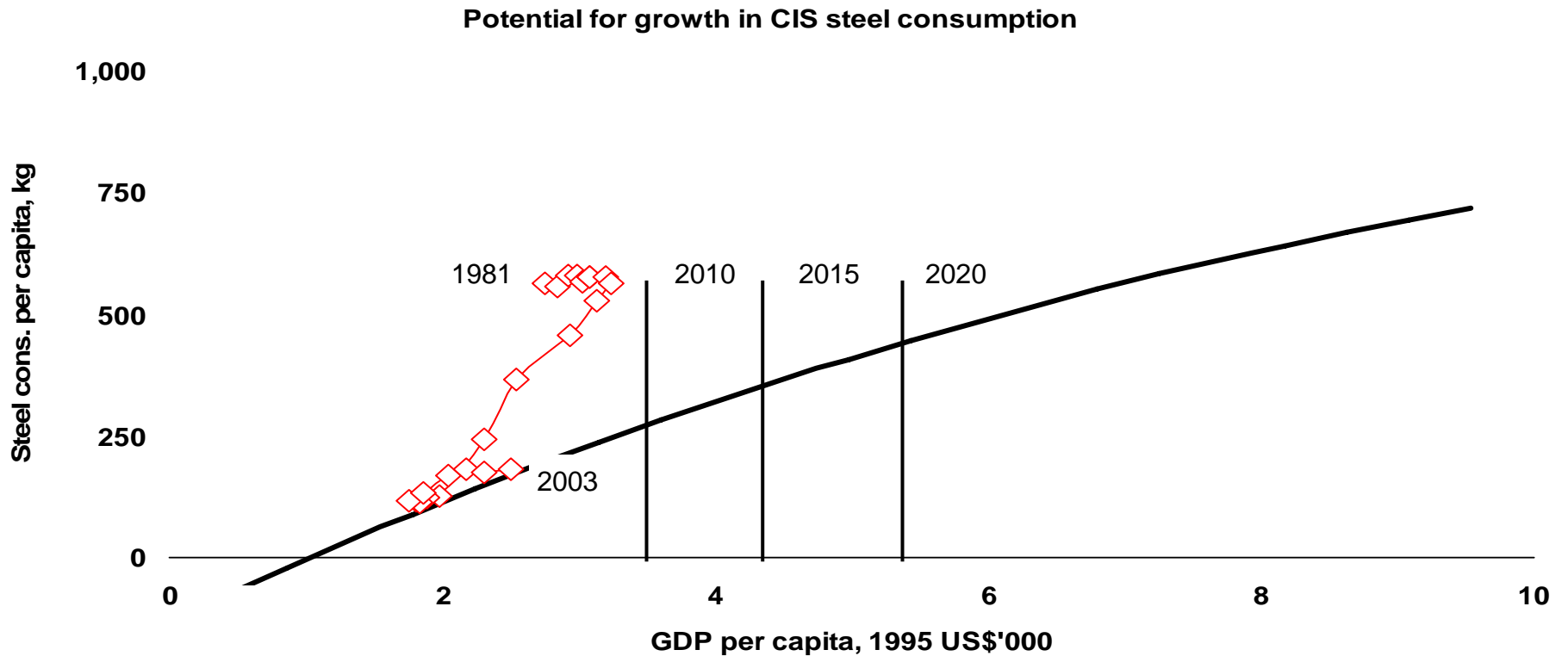
We can see a well established pattern in the growth of steel consumption relative to rising income over time

The r curve relationship between steel consumption and income



Source: Hatch Beddows, IISI, IMF, UN

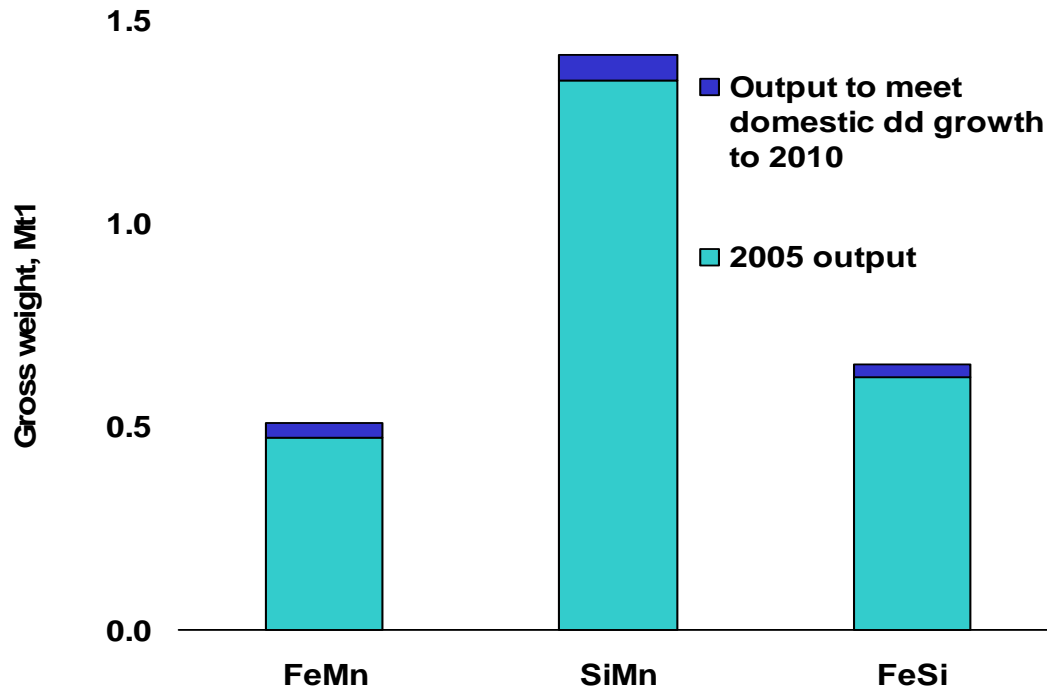
Looking along the r curve we can see scope for substantial growth in CIS steel consumption



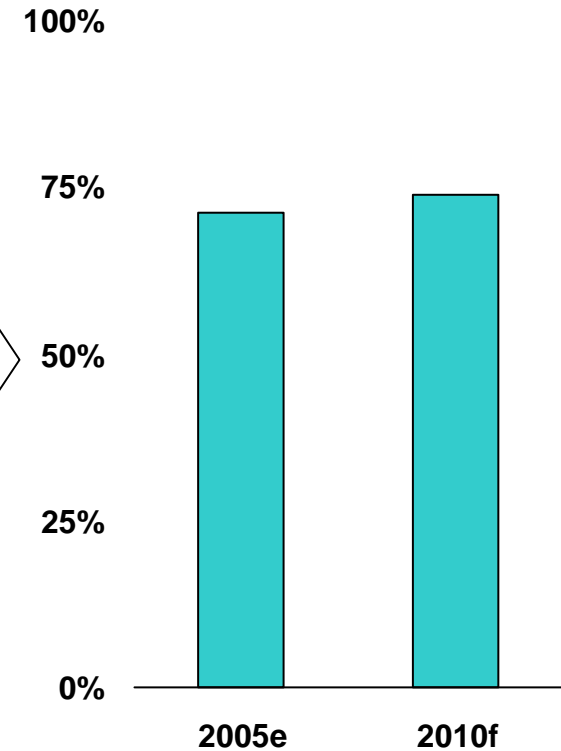
Source: Hatch Beddows, IISI, IMF, UN

CIS producers have room to raise ferroalloys output and capacity to continue serving export markets for many years to come

CIS ferroalloys production and potential



CIS capacity utilisation

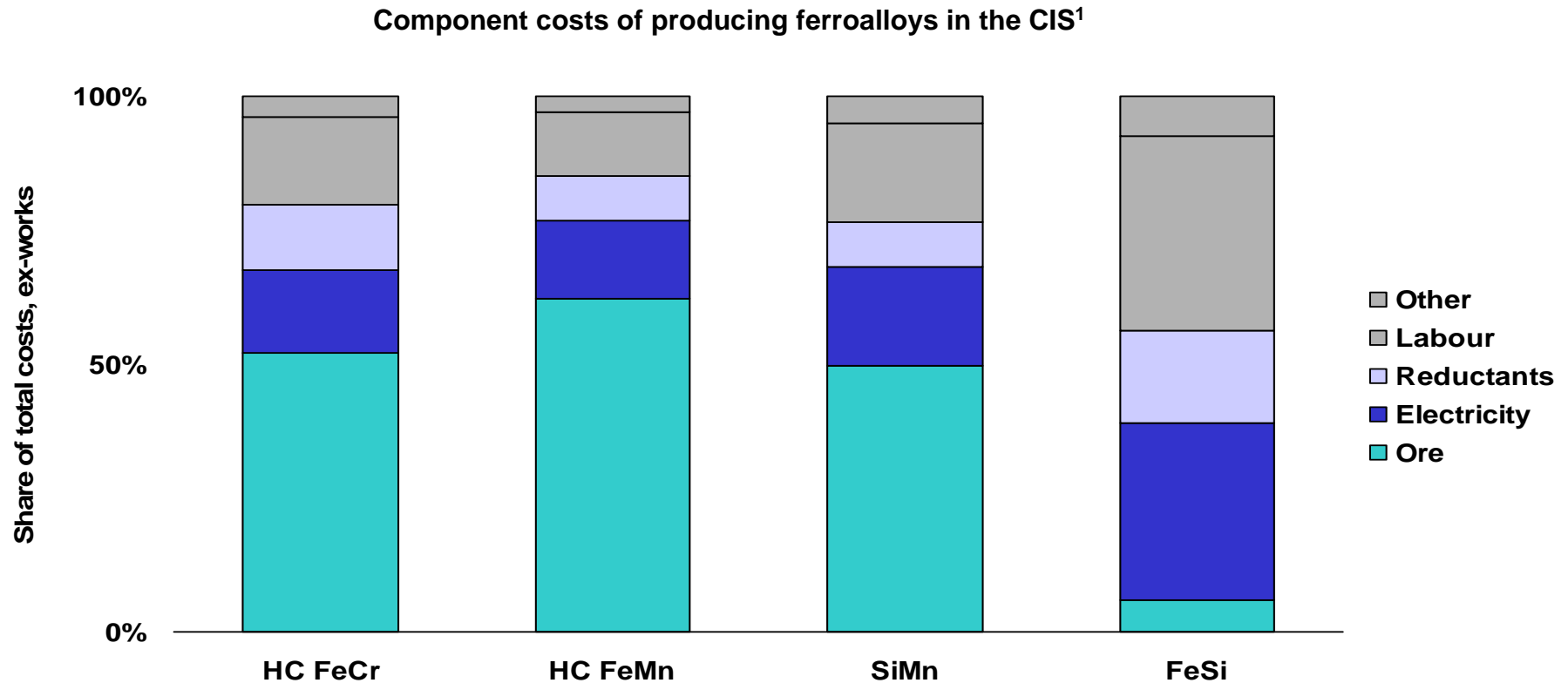


Source: Hatch Beddows. Note: All calculations assume unit alloy consumption rates and ferroalloy production capacity remain constant at 2005 levels. Russian B/F Mn production excluded from calculations. 1. Gross weight except FeSi 75

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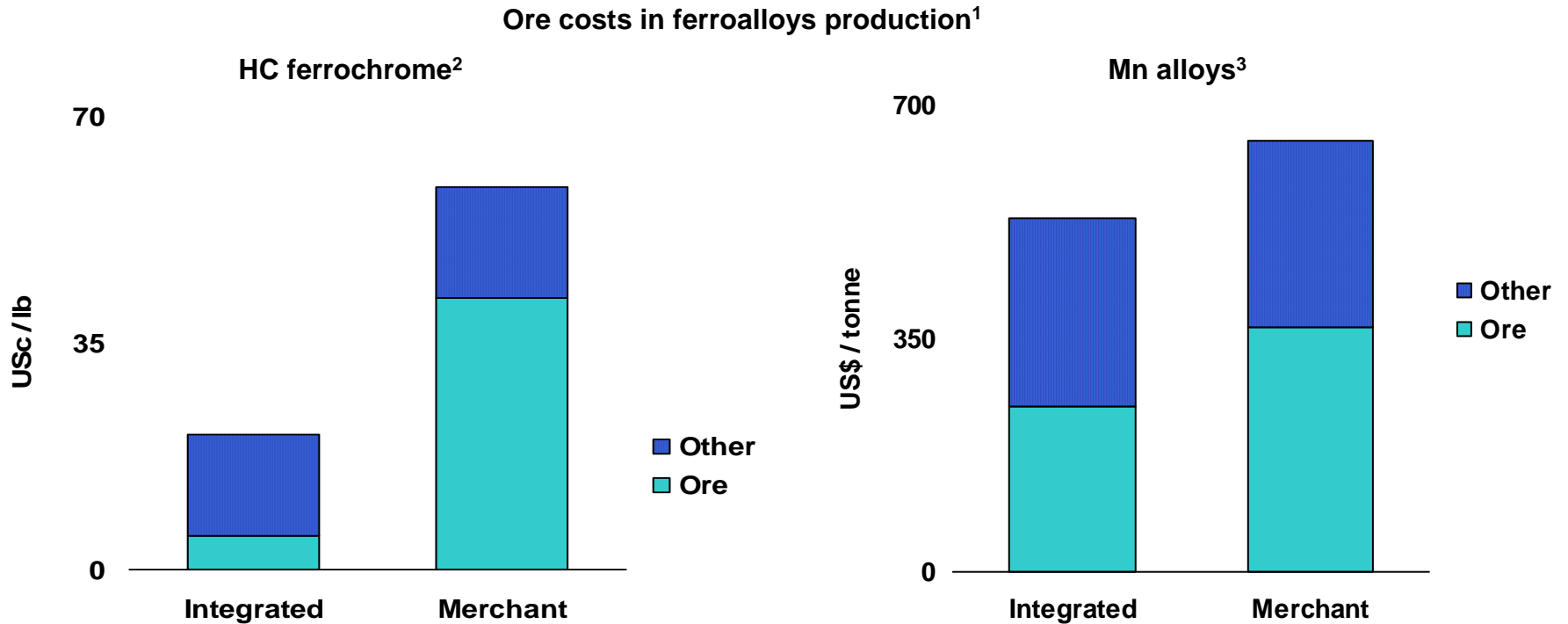
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In CIS countries, as elsewhere, ore, electricity and labour are the major costs in ferroalloys production



Source: Hatch Beddows. Note: 1. volume weighted average for CIS EAF plants, excluding Georgia, based on data for 2005

Integrated producers of chrome and manganese alloys with captive ore supplies have a clear advantage over merchant producers

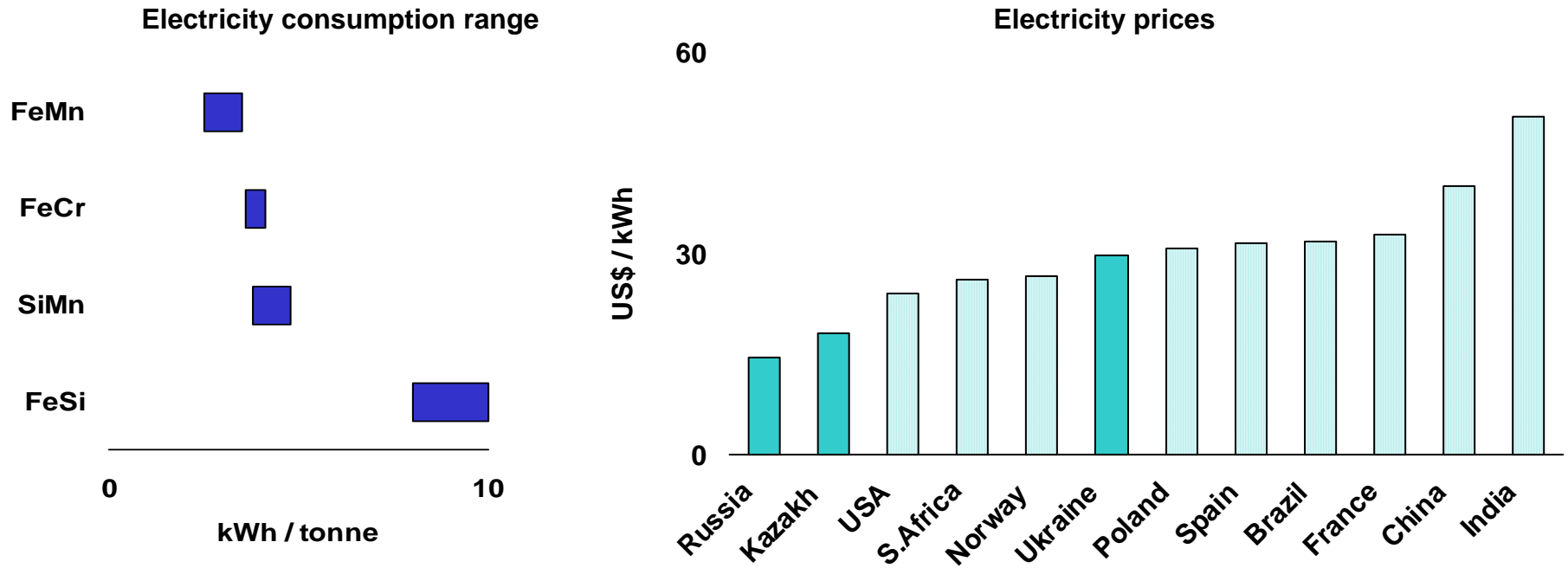


A number of leading CIS producers have captive ore supplies

Source: Hatch Beddows. Note: 1. Volume weighted averages based on data for 2005. 2. Kazakhstan. 3. Ukraine

Russia and Kazakhstan enjoy very low electricity prices at less than half the world average

Electricity consumption and electricity prices in ferroalloys production

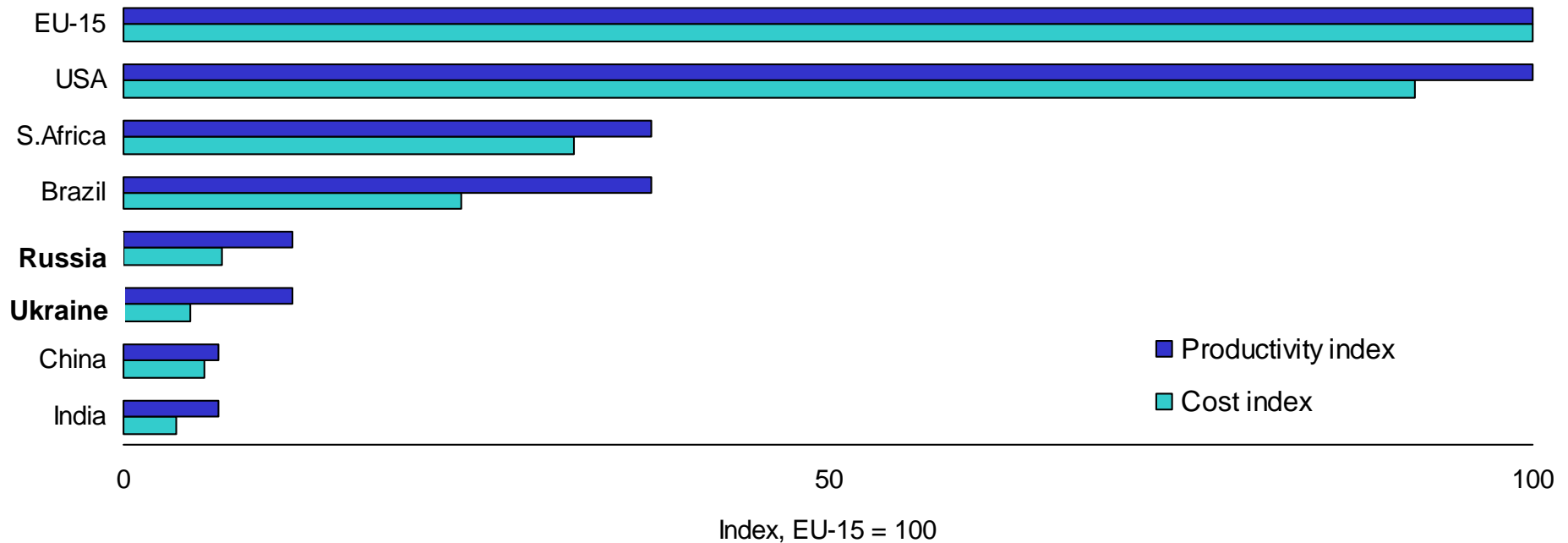


Electricity accounts for up to about one-third of production costs

Source: Hatch Beddows, IEA

CIS countries enjoy low labour costs and while productivity levels are lower than in industrial countries they have an overall advantage

Labour costs and productivity levels in ferroalloys production



CIS productivity <15% of EU-15 levels but labour costs <5% of EU-15 levels

Source: Company reports, Hatch Beddows, SteelConsult. Note: Productivity data based on SiMn production

CIS countries are well placed for low cost production of ferroalloys, in particular chrome and manganese alloys

Country	Alloy	Ore	Power	Reductants	Labour	Transport	Total ^①
Kazakhstan	Cr alloys	●	●	◐	●	○	7
	Mn alloys	◐	●	◐	●	○	6
	Si alloys	○	●	◐	○	○	3
Russia	Cr alloys	◐	●	◐	●	⊗	5
	Mn alloys	⊗	●	◐	●	○	4
	Si alloys	○	●	◐	○	○	3
Ukraine	Mn alloys	◐	○	◐	●	◐	5
	Si alloys	○	○	◐	◐	◐	3

● Strong advantage (2) ◐ Advantage (1) ○ Neutral (0) ⊗ Disadvantage (-1). ^①Score out of 10

CIS countries command a number of advantages for the production of ferroalloys although these vary across the region

	Kazakhstan	Russia	Ukraine
Cr reserves	●	○	⊗
Mn reserves	◐	⊗	●
Cr / Mn ore quality	●	○	○
Availability of reductants	◐	◐	◐
Range of ferroalloy products	●	◐	◐
Smelter capacity utilisation	●	○	◐
Domestic customer base	○	◐	◐
Distance to export markets	○	○	◐
Cost to serve markets	●	◐	◐
Currency risk	◐	◐	◐
Political risk	◐	○	⊗

● Strong advantage ◐ Advantage ○ Neutral ⊗ Disadvantage

Source: Hatch Beddows.

CIS ferroalloys industry: summary of strengths and weaknesses

Strengths

- Large reserves of chromite and manganese ore and ready supply of reductants
- Low production costs, an advantage that is likely to last for some time
- Strong export potential and growth in domestic demand, albeit from a low base

Weaknesses

- Ore reserves and alloy production facilities are in some case remote from market
- Lack of vertical integration in some cases, although this is now changing
- Low profile of some companies, although this is now changing

CIS ferroalloys industry: potential opportunities and possible threats

Opportunities

- CIS countries offer a low cost location with ready availability of natural resources for with the potential to be world class producers in Cr and Mn alloys
- Cash-rich CIS companies looking for investment opportunities at home and abroad
- Chromite mining, FeCr production and stainless steel production in Kazakhstan
- Consolidation of the manganese alloys industry in Ukraine

Threats

- Trade tensions and protectionism
- The challenge from China in FeSi production
- Increasing inland transportation costs
- Political risk

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Concluding remarks

- CIS countries command a number of advantages for the production of ferroalloys, not least low costs
- CIS companies have the potential to be among world leaders in production of FeCr and manganese alloys, but possibly not FeSi
- CIS countries should take the risk of rising trade tensions seriously
- CIS companies can be expected to play an increasingly important role in the ferroalloys industry
- There are important strategic implications for all involved in the ferroalloys industry

Thank you for your attention

Hatch Beddows

For further information and related questions please contact:

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