

Metal Bulletin

Overview and outlook of global steel production

Steel Logistics Conference

24 – 26 September 2007



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Hatch Beddows

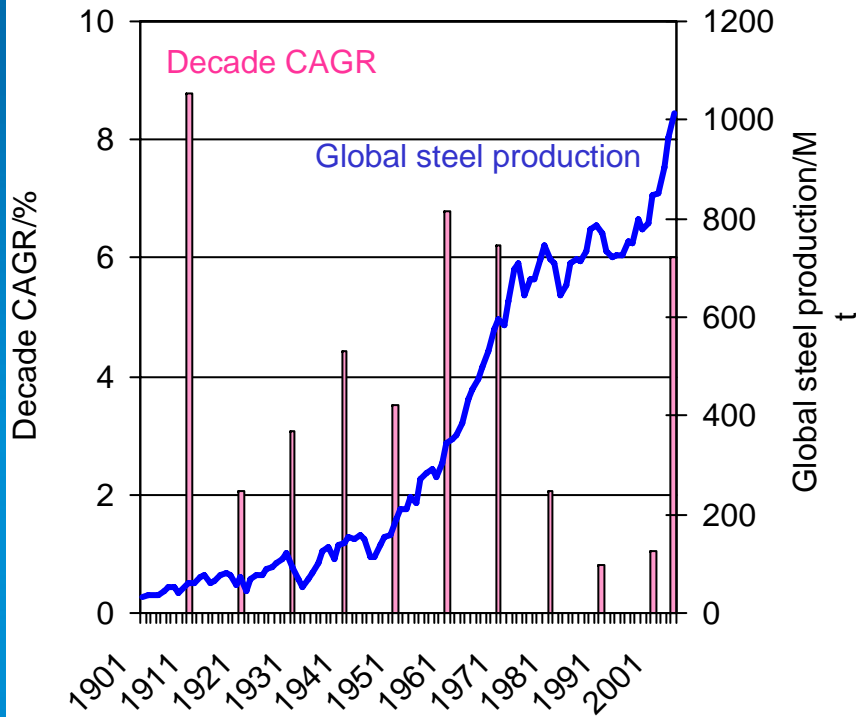
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- **Global steel consumption**
- Global steel production
- Production and consumption connected - trade
- The responses to trade
- Conclusions

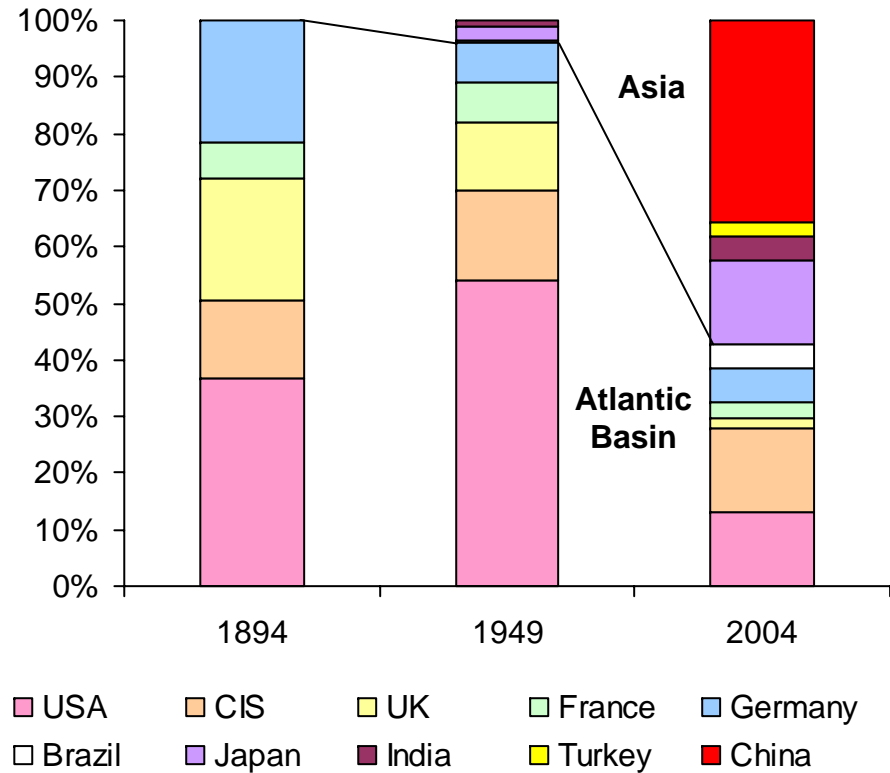
OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

Growth in global steel production is back to normal but the locations for production are changing massively – steel is now an Asian business

Global steel production and growth rates

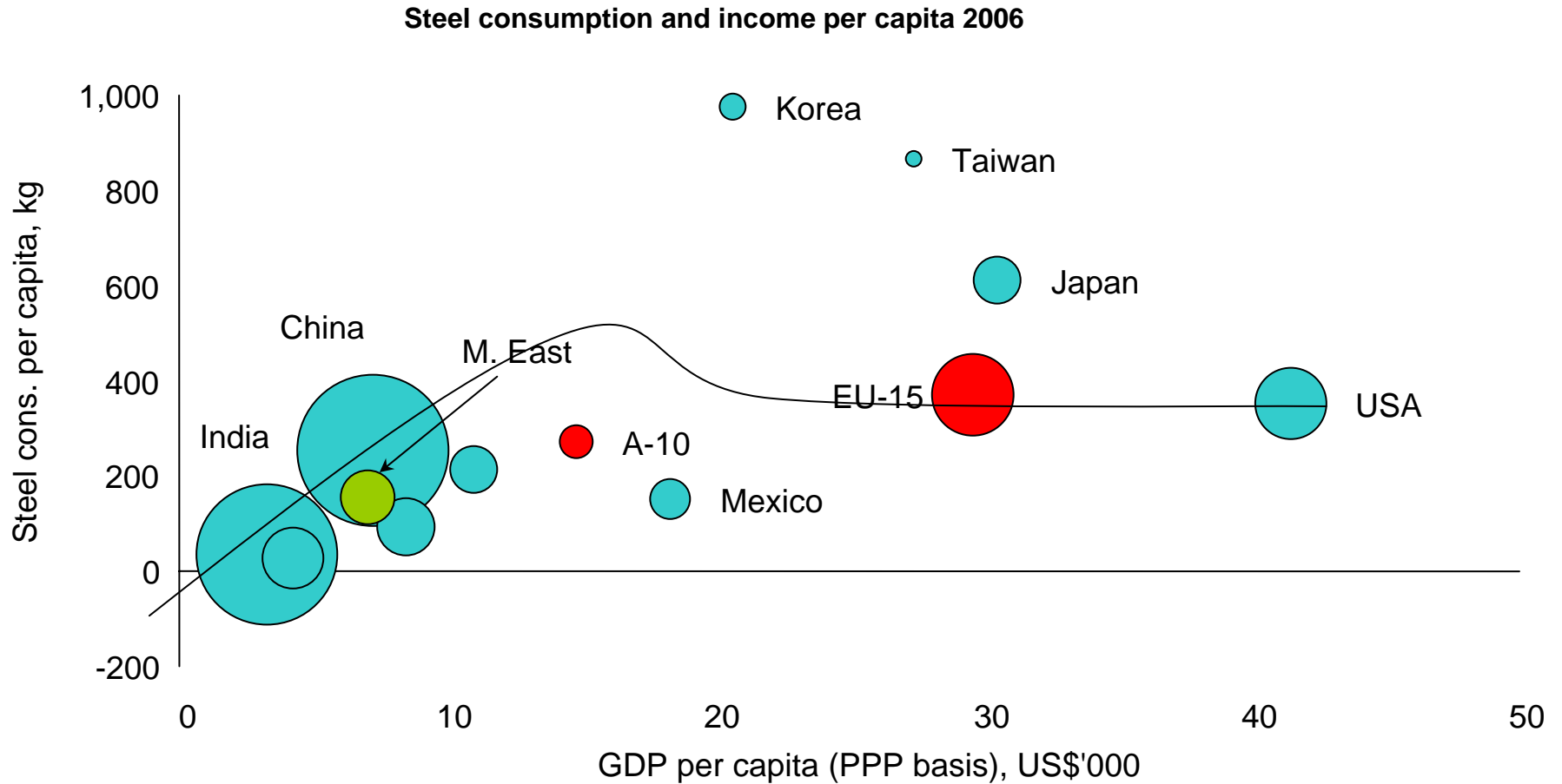


Steel production by region



OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

...largely driven by massive consumption, now and in the future, of half of the world's population



Note: Size of bubbles is proportional to size of population in each country or region

OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

The potential for long-term growth in steel demand is substantial; our model points to >900Mtpa of additional demand in the next 20 years, mainly in Asia

Long-term forecasts of steel demand growth by region¹

Region	2006	LT CAGR ¹	~2026F	Key differences
North America	143	2.0%	211	
South America	34	3.4%	67	
Europe	173	0.5%	192	
CIS	53	2.4%	86	
China	351	3.4%	684	333
India	44	8.7%	233	189
Japan	164	-0.7%	143	
Other Asia	67	5.4%	192	125
Rest of world	107	3.8%	228	
World total	1,135	3.0%	2,036	901

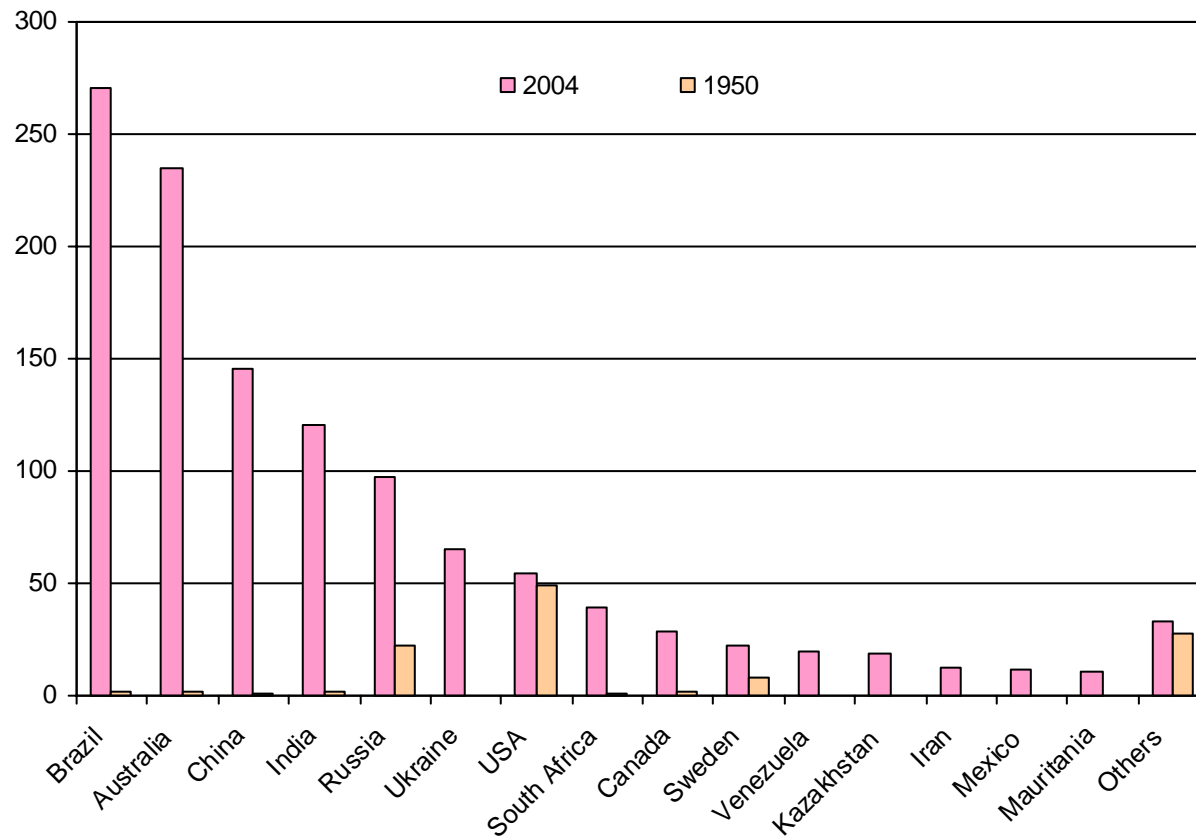
Note: 1. Finished steel consumption. Rest of world data are calculated as residuals

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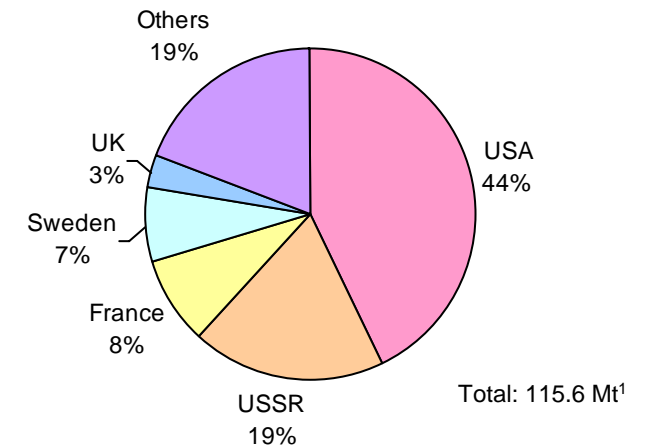
- Global steel consumption
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Raw material supply has completely changed since 1950 - a change that led the globalization of the world steel industry providing a new cost base

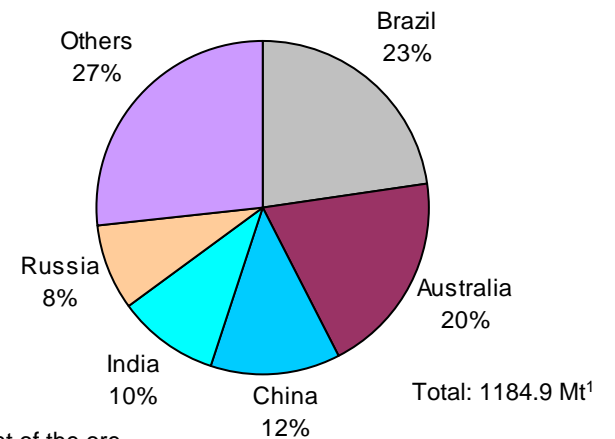
Historical and current world iron ore production by country (Mt¹)



1950 iron ore output by country



2004 iron ore output by country

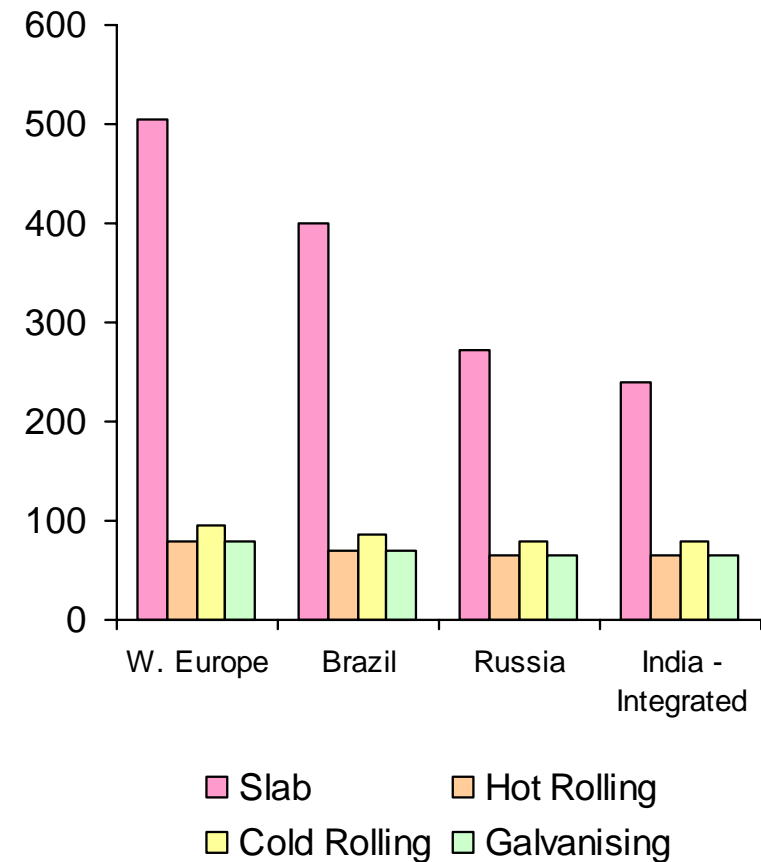
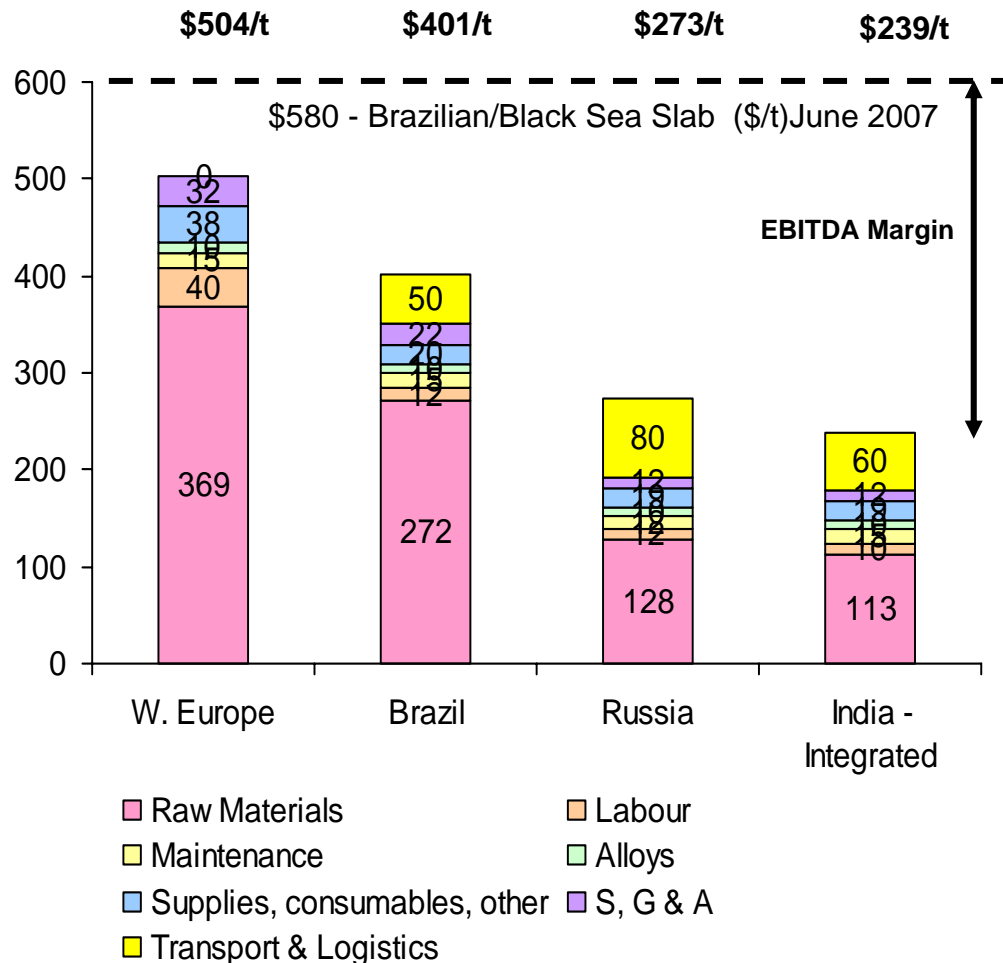


Note: ¹UNCTAD iron ore production data is expressed in gross weight terms, accounting for variations in the iron content of the ore

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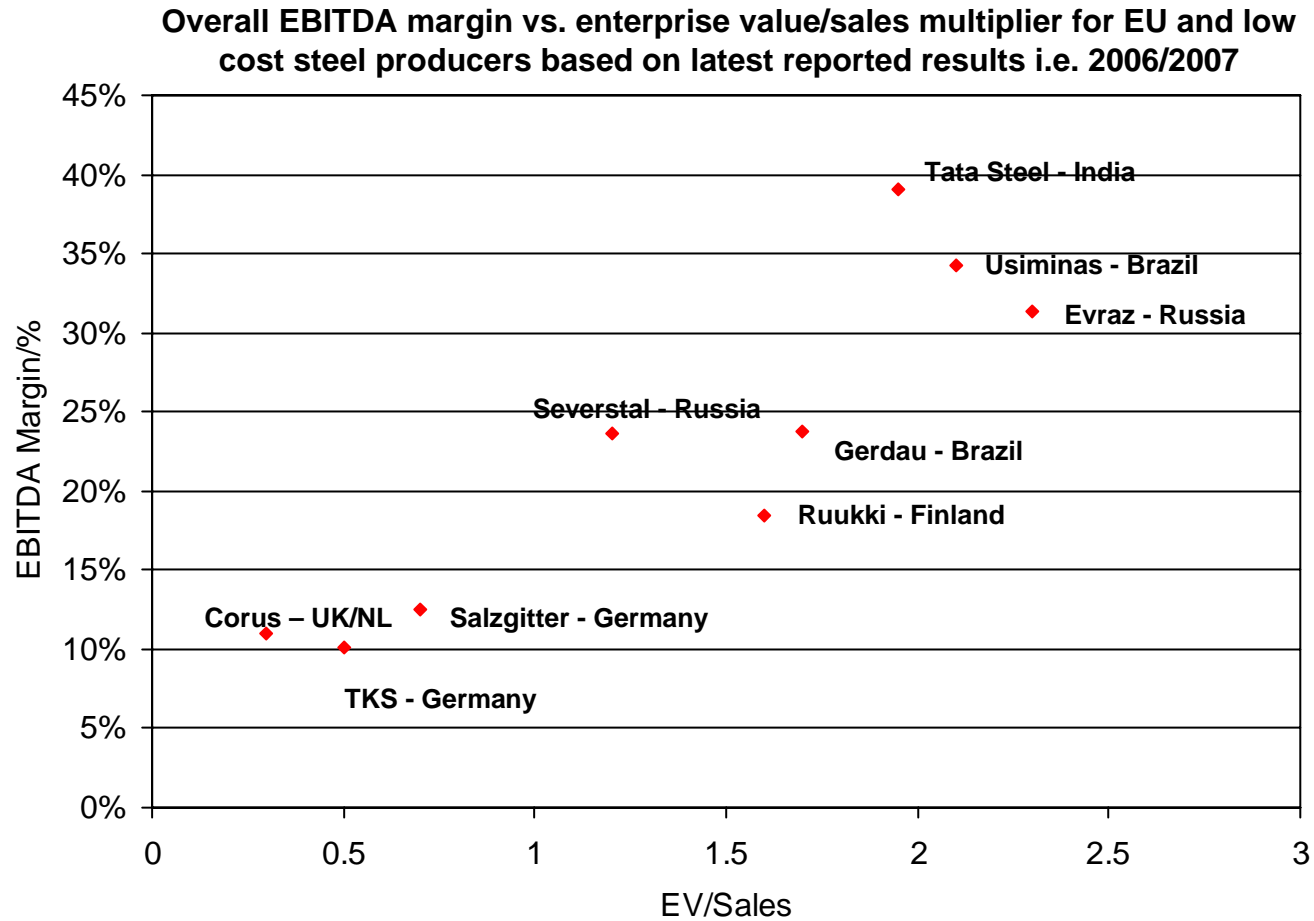
Raw material supply dominates the steel making cost structure – downstream operations are more homogeneous

Cash costs (\$/t) for slab, hot and cold rolling and galvanising for W. Europe and other selected low cost regions



Source: Tex, SBB, McCloskey and Hatch Beddows

...which also shows up elsewhere!! Can European steelmakers ever resist?



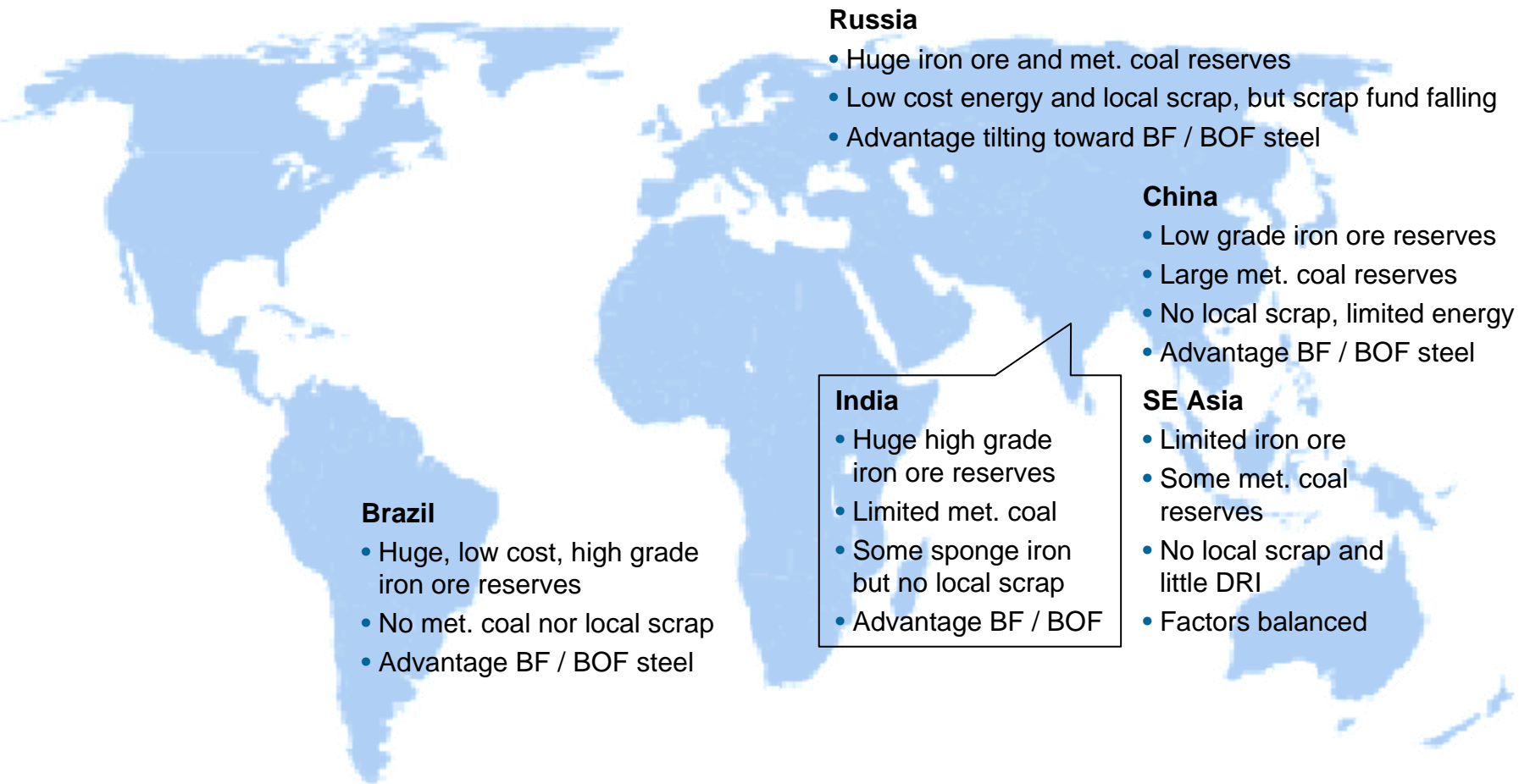
Note: Note: Enterprise Value ("EV") calculated as Market Capitalisation + Net Debt

Corus Group and Tata Steel before their merger

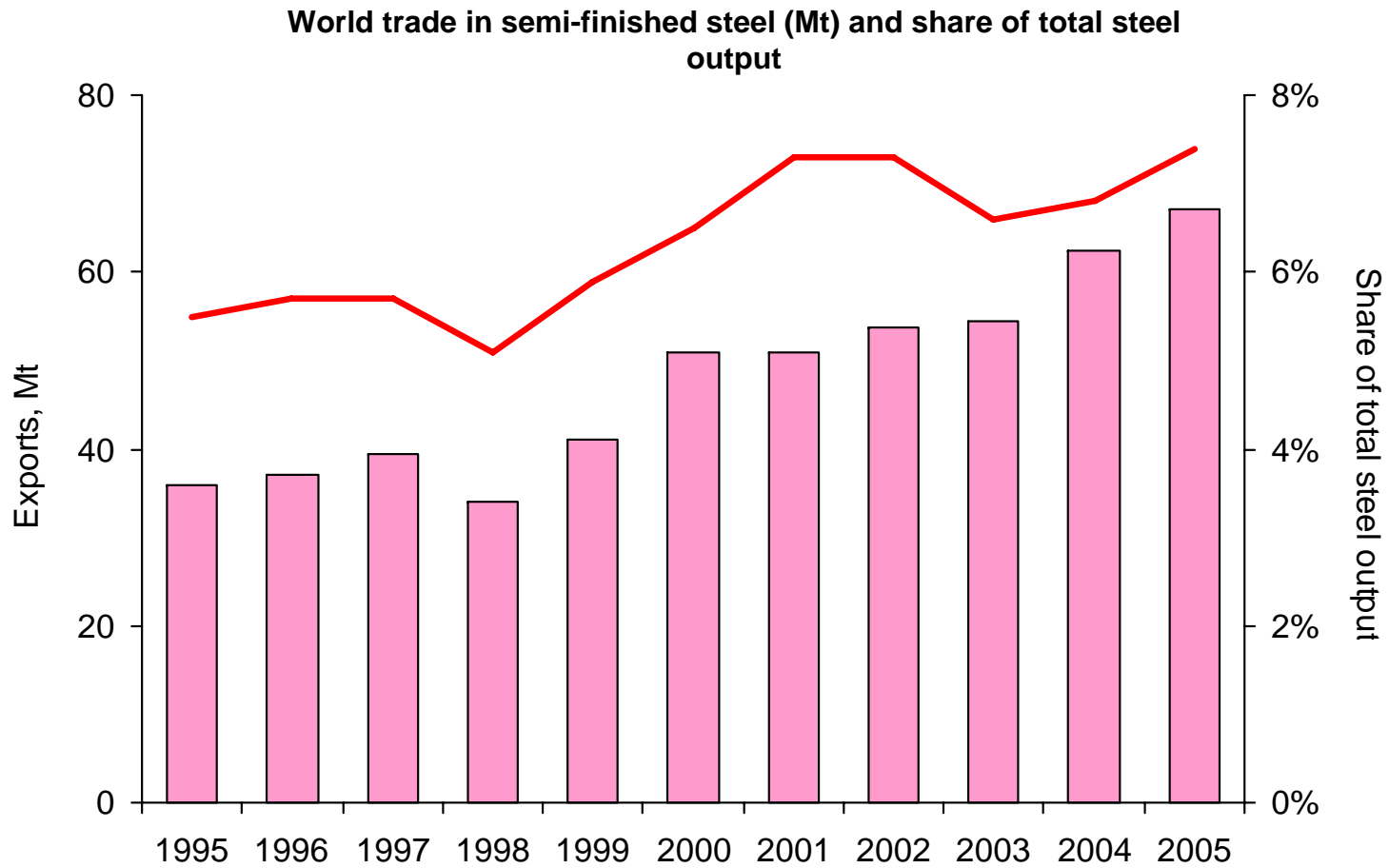
Source: Bloomberg and Hatch Beddows

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Key factors of production in high-growth steel markets and low-cost steelmaking locations tend to favour the BF / BOF process route



Trade in semi-finished steel is rising both in volume terms and as a proportion of total steel production



Can all the steel required in the future be made?

Virgin Iron: World Requirements

MT	2000	2015
Crude steel production	822	1390
Required virgin iron volume	450	800
Required ore @ 65% Fe content	690	1230
Ore actually used / required	960	1700
Sea borne ore trade	445	795
Dry bulk vessels required	405	720

Assuming EAF % in steel make remains at ~ 36%

Global Scrap Requirements

	Scenario One			Scenario Two		
	1985	2000	2015	1985	2000	2015
Scenario One: Hold HBI production at current levels						
Scenario Two: Hold scrap recovery levels constant						
Total metallics requirements (scrap and substitutes)	352	432	740	352	432	740
Total scrap available (home, prompt, obsolete scrap)	336	379	673	336	379	521
Total scrap substitutes (HBI, merchant pig iron)	17	53	66	17	53	219
Implied recovery rate (obsolete scrap)	30%	32%	55%	30%	32%	32%

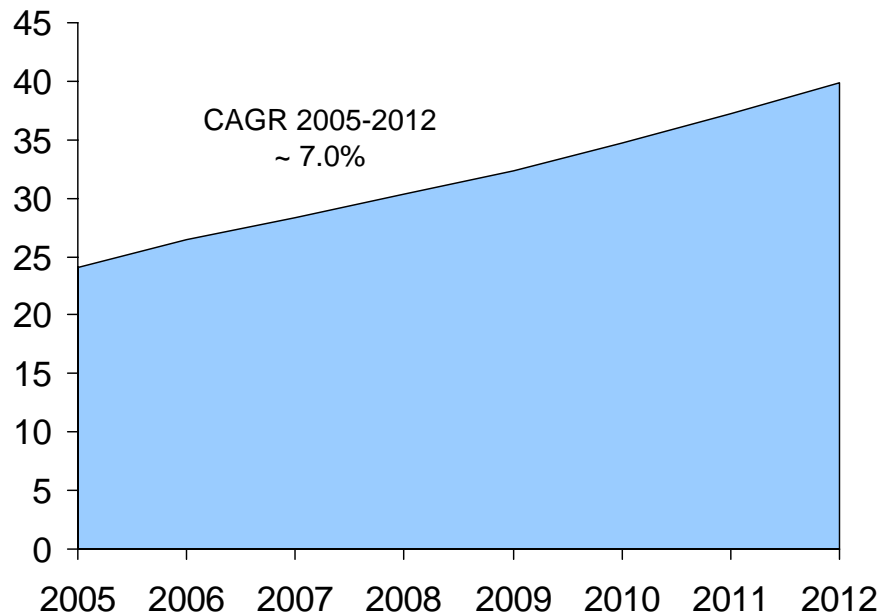
China has created a turning point for the steel industry and many things will have to change

- We will need new sources of iron ore
- Steelmaking will progressively move to sources of raw material
- Scrap prices will rise and steelmaking via the EAF route will reduce its share
- There will be substantial growth in DRI/HBI production
- New technologies utilising low grade iron ore will become economical
- The industry will enjoy higher returns
- There will be more turbulence: Driven primarily by supply side dynamics

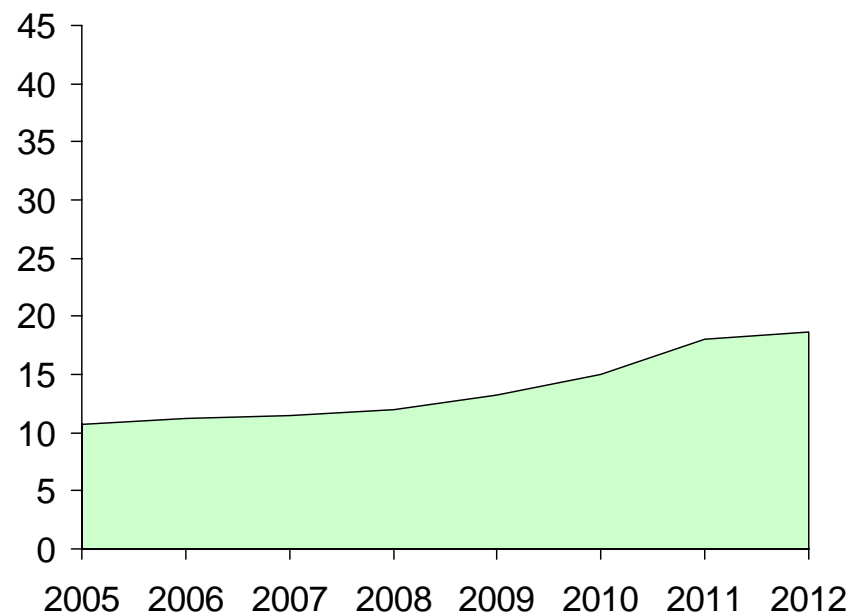
Where is the next shock coming from?

A case study - accounting for the planned greenfield and brownfield expansions in the Middle East region, local production will still be unable to meet the expanded consumption by 2012...

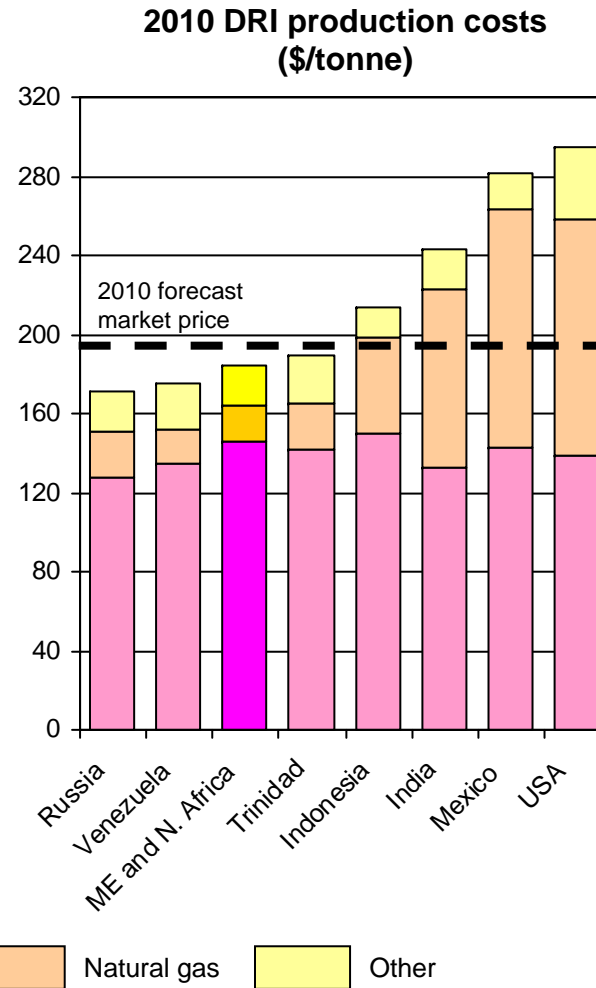
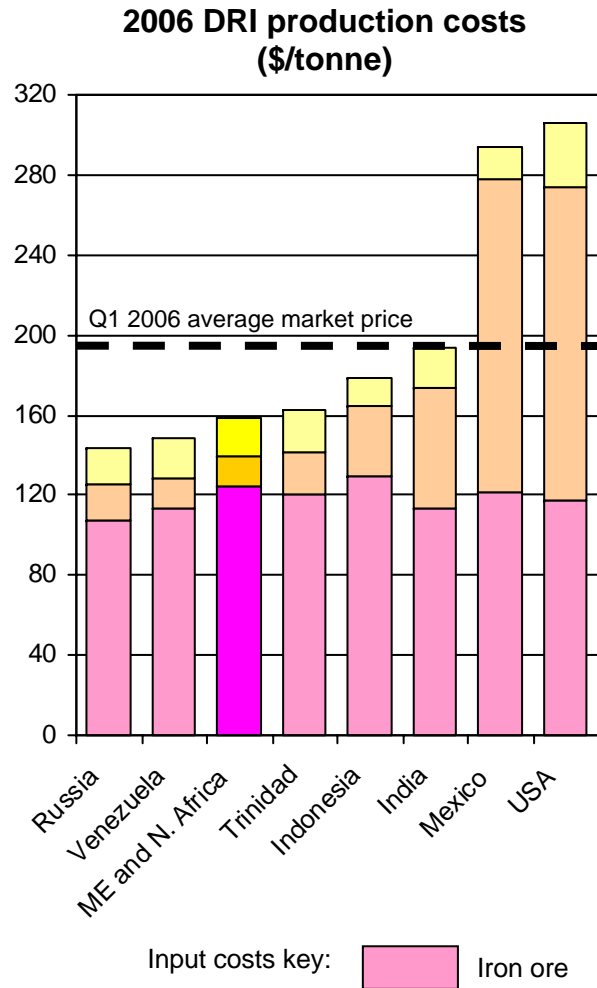
Forecast of finished steel consumption, M. East (Mt)



Forecast of crude steel production, M. East (Mt)

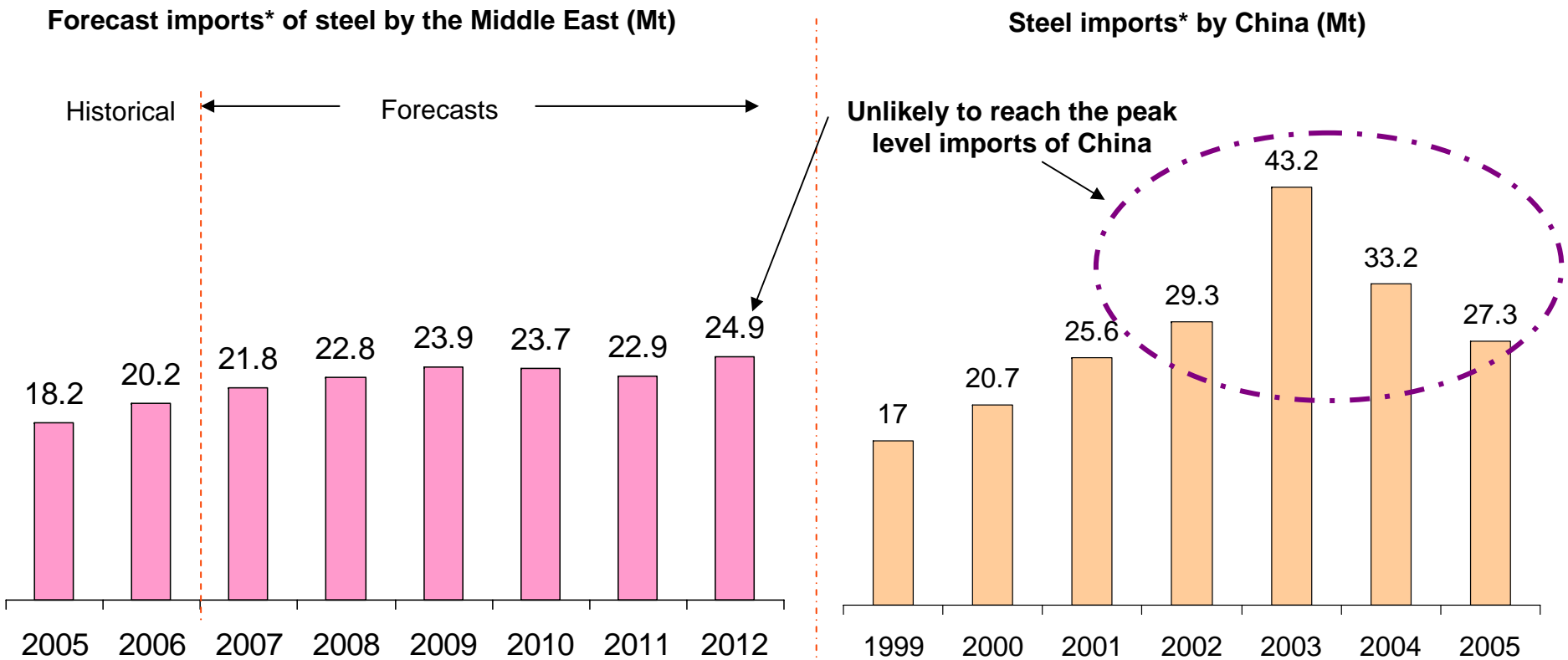


In response to local demand, the region could become a base for DRI production



- Middle East and N. African DRI/HBI is set to grow rapidly based on:-
 - Need for indigenous steel supply in growing regions
 - Low cost natural gas, labour and certain other cost inputs
- Algeria in particular could have an advantage as iron ore reserves could be developed, though this would necessitate pelletization

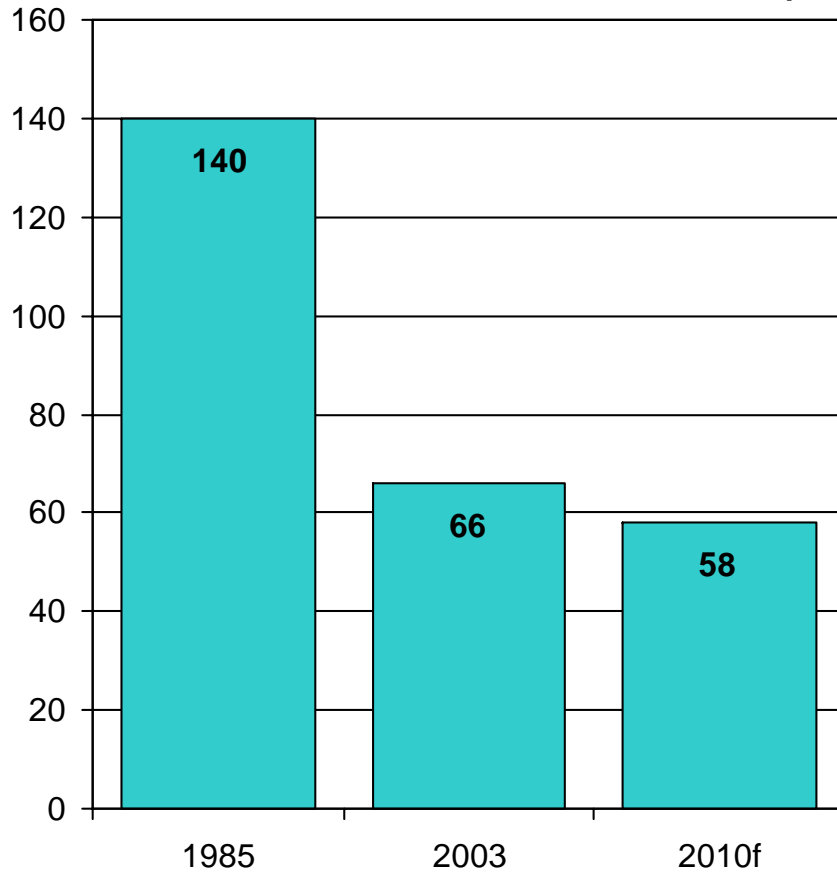
... or it could become the new China for CIS BOF based exporters



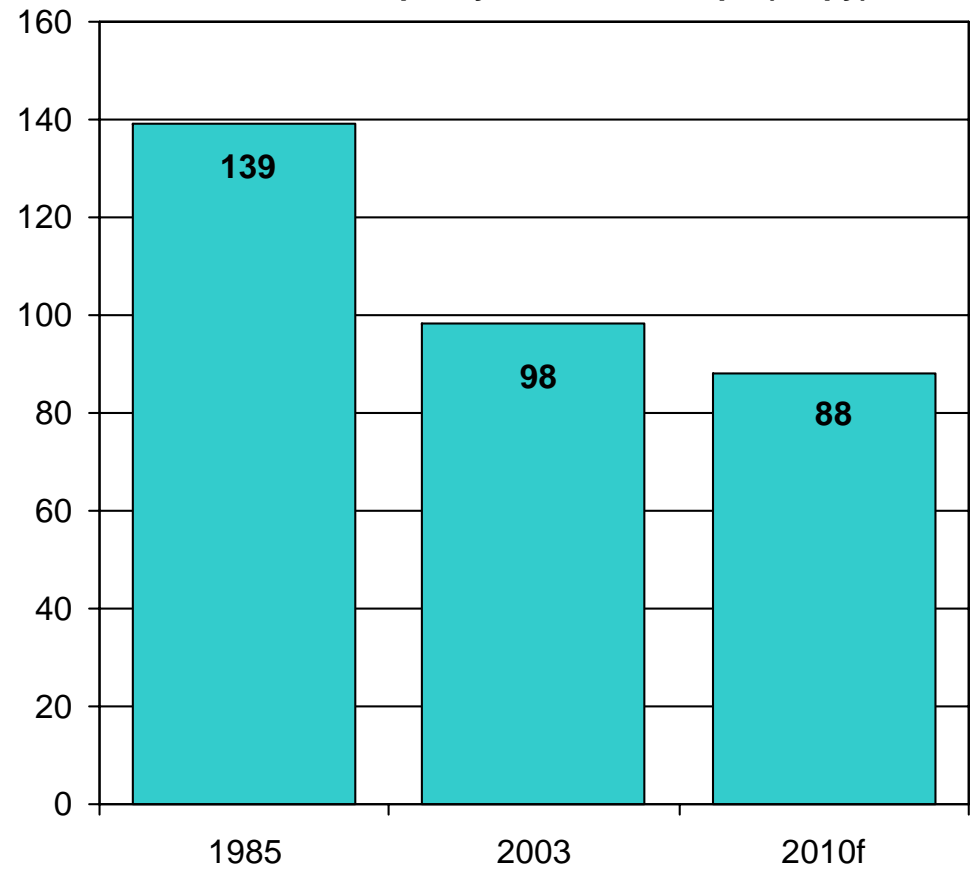
*Imports include semis, finished steel, pipe and tube

Elsewhere, will the EU keep any blast furnaces?

Number of Blast Furnaces in Western Europe

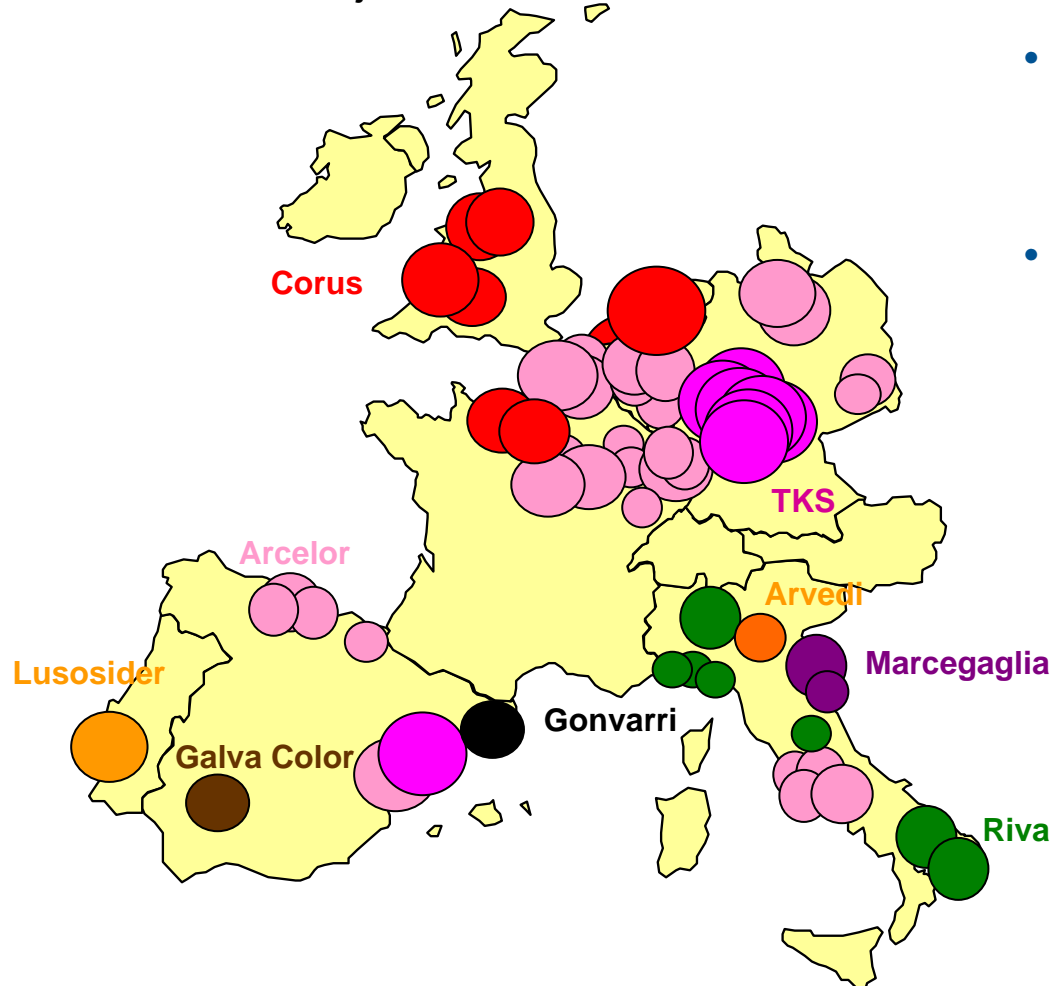


Total BF Capacity Western Europe (m tpy)



OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION ...and what about the coating lines?

Location of major EU 15 HDG lines



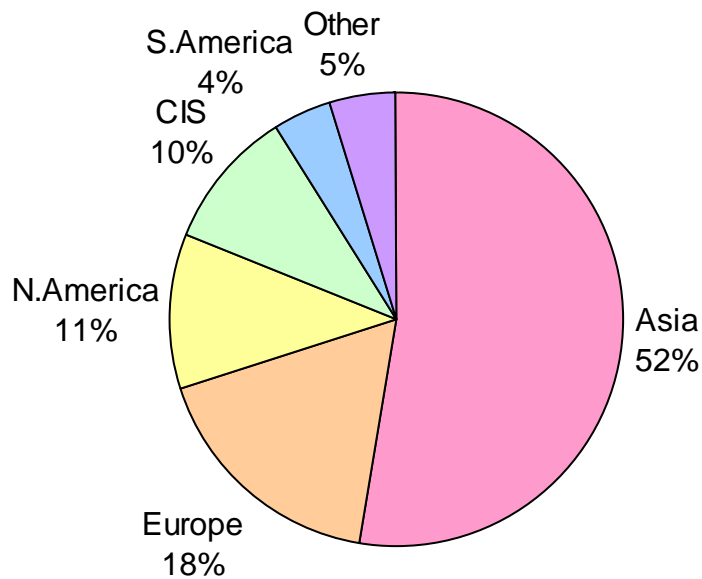
- Coating lines can be and need to be far more regional and flexible than highly invested hot and cold mills
- Several JV and independent coating lines currently operate within Europe, though these are few by world standards

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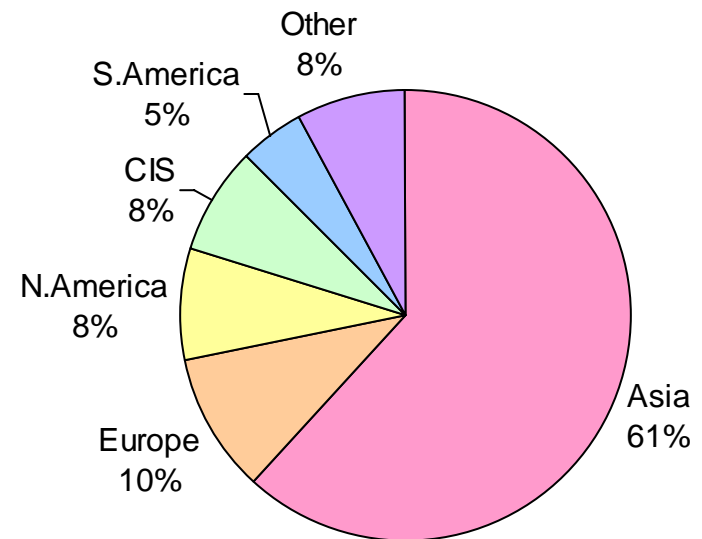
Overall, Asia is expected to expand its share of world steel production, although steelmaking is forecast to rise in all regions in volume terms

- Asia, CIS and South America are expected to expand their share of world steel output
- Europe and North America are expected to see their share of output fall but volumes rise

World steel output in 2006¹



World steel output ~2026¹



OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

China and East Asia will remain the dominant regions in world steel production but India, South America and the CIS will also add significant output volumes

Historical and Forecast Crude Steel Production by Region

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	% World 2004	% World 2015
China	247	259	272	285	305	326	345	364	385	408	432	458	23%	29%
Other East Asia	200	206	214	222	230	238	247	256	266	276	287	298	19%	19%
Europe	227	231	235	240	244	249	254	258	263	268	274	279	21%	17%
CIS	135	142	152	159	160	160	168	174	179	183	188	192	12%	12%
North America	140	140	137	136	137	138	136	137	138	139	140	140	13%	9%
South America	49	52	54	57	60	63	66	69	72	76	79	83	5%	5%
Africa	20	21	22	23	23	24	25	26	27	28	29	30	2%	2%
Middle East	20	20	21	21	22	22	23	24	24	25	26	26	2%	2%
India	33	35	38	41	44	48	52	56	60	65	70	76	3%	5%
Oceania	10	10	11	11	12	12	13	14	14	15	16	16	1%	1%
World	1080	1117	1155	1195	1238	1282	1328	1377	1428	1482	1539	1598	100%	100%

%s do not add up due to rounding

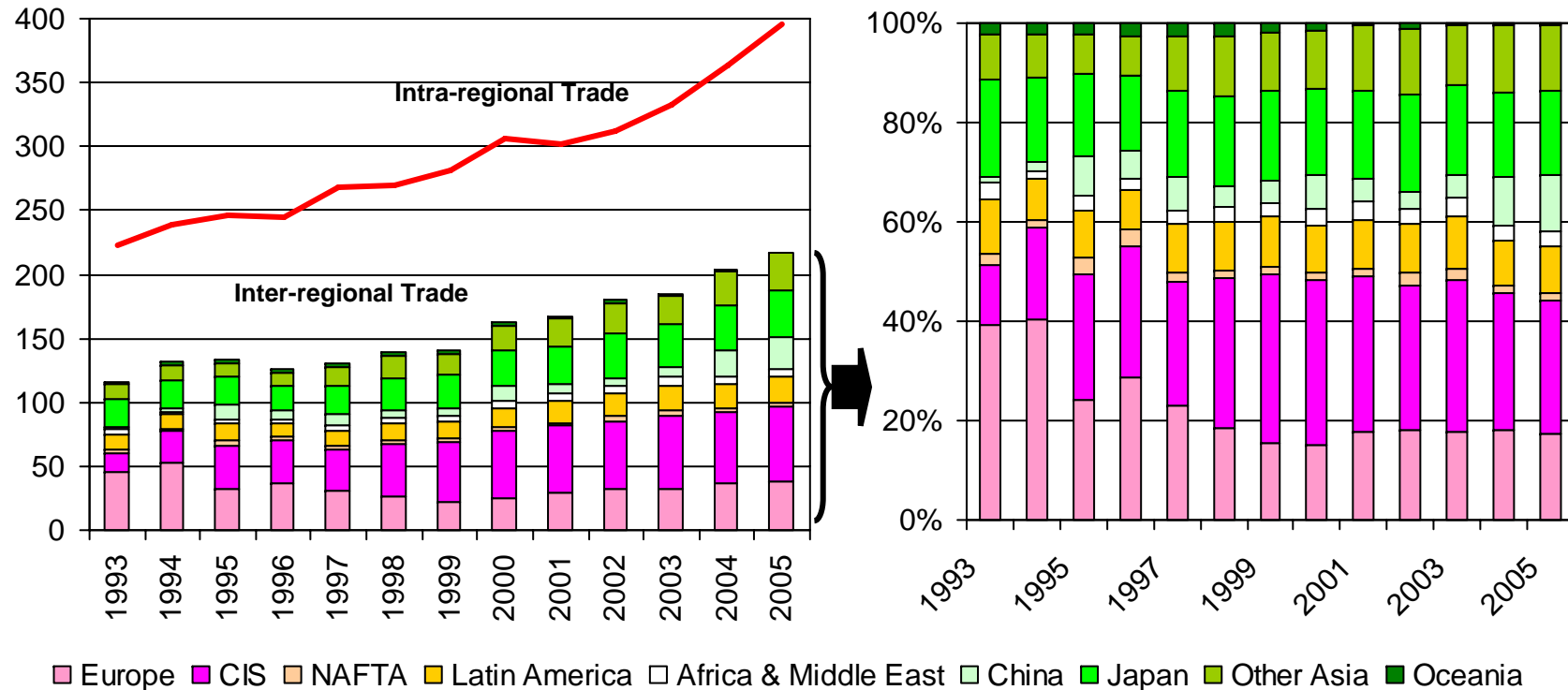
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About 400 Mt of steel now crosses a border and over 200 Mt is consumed outside of its region of production – CIS and Asia also dominate trade

Inter- and extra regional steel trade (exports)

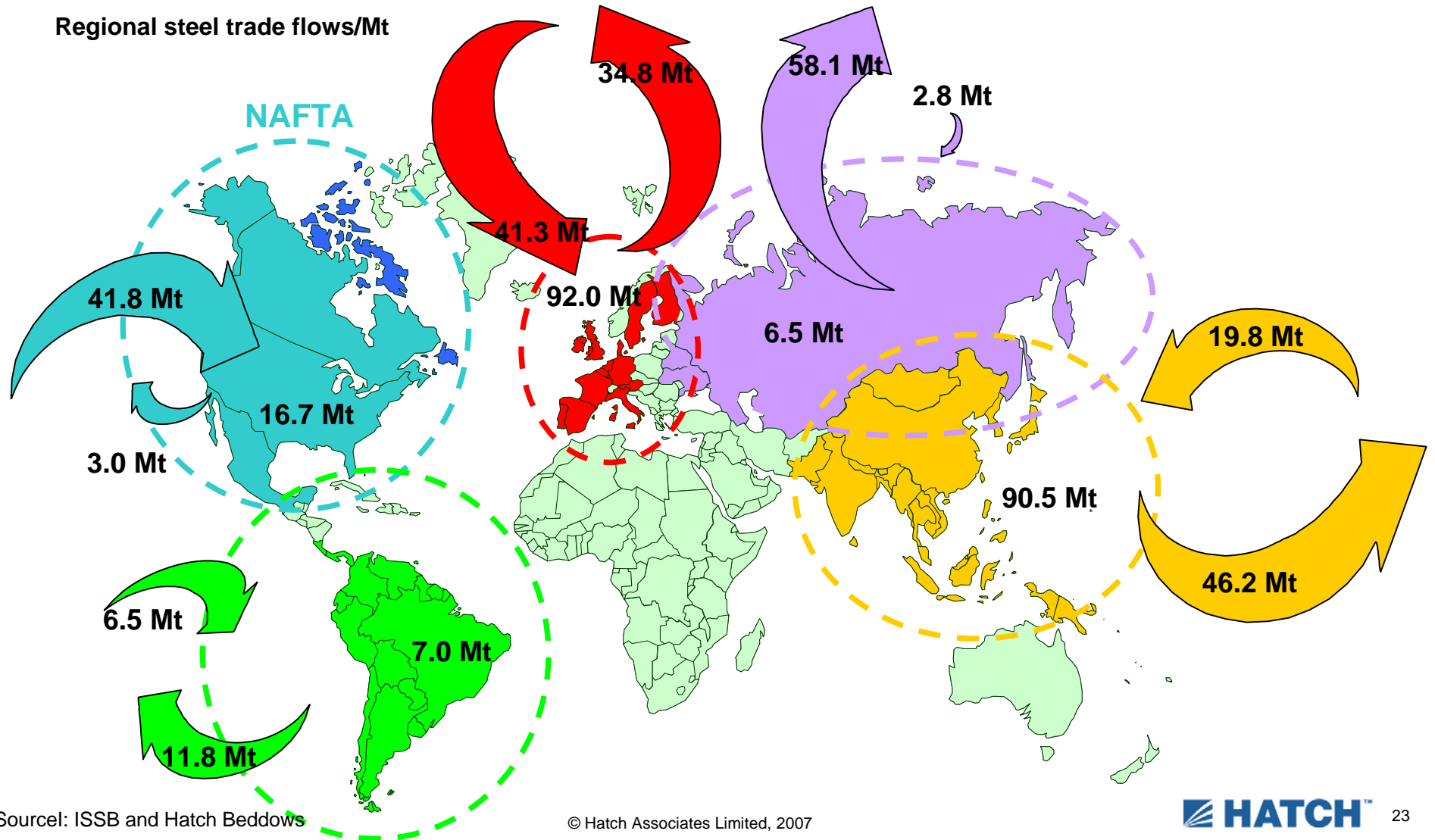


Note: Trade covers the IISI broad definition of steel products and covers exports only (imports theoretically match)

Source: IISI, ISSB and Hatch Beddows

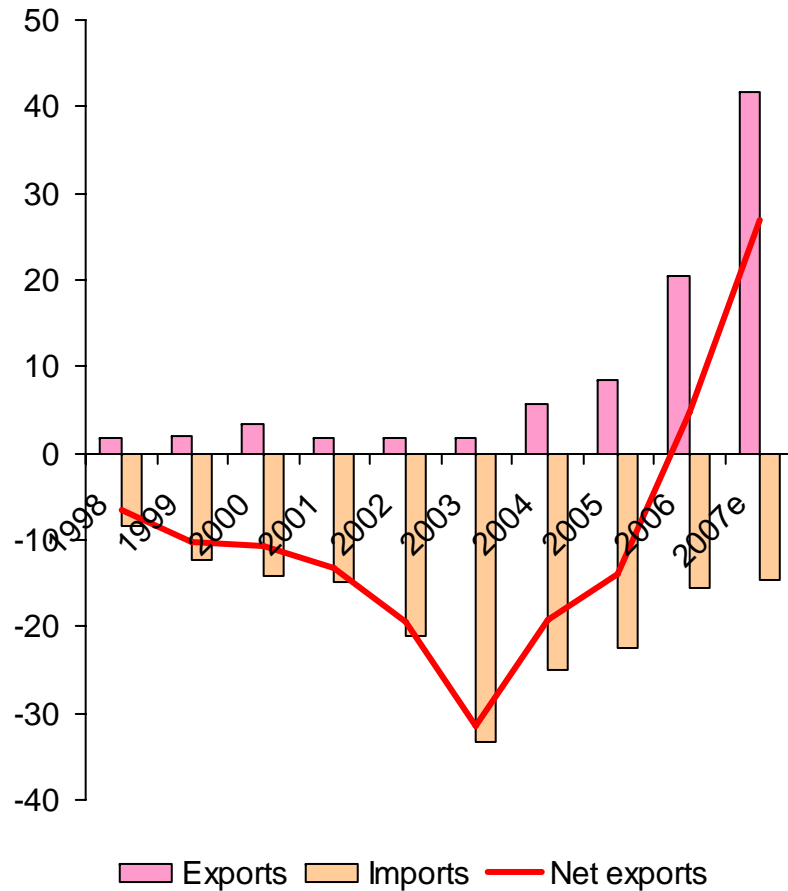
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Europe is now a net importer of steel products

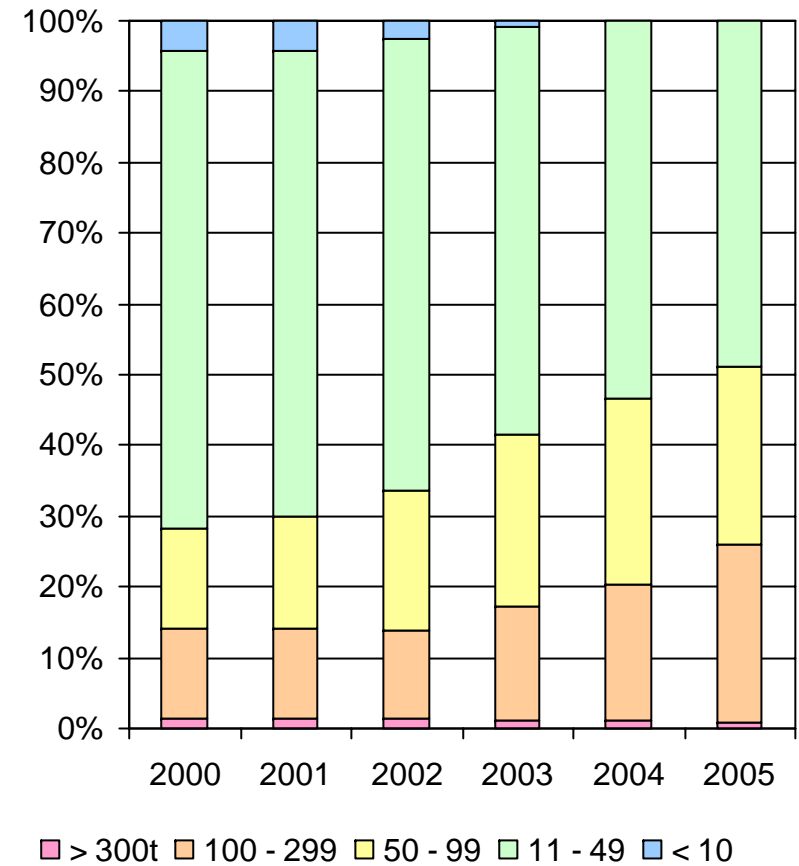


The question everybody is asking - is the growth of Chinese exports in evermore technologically advanced products a structural change?

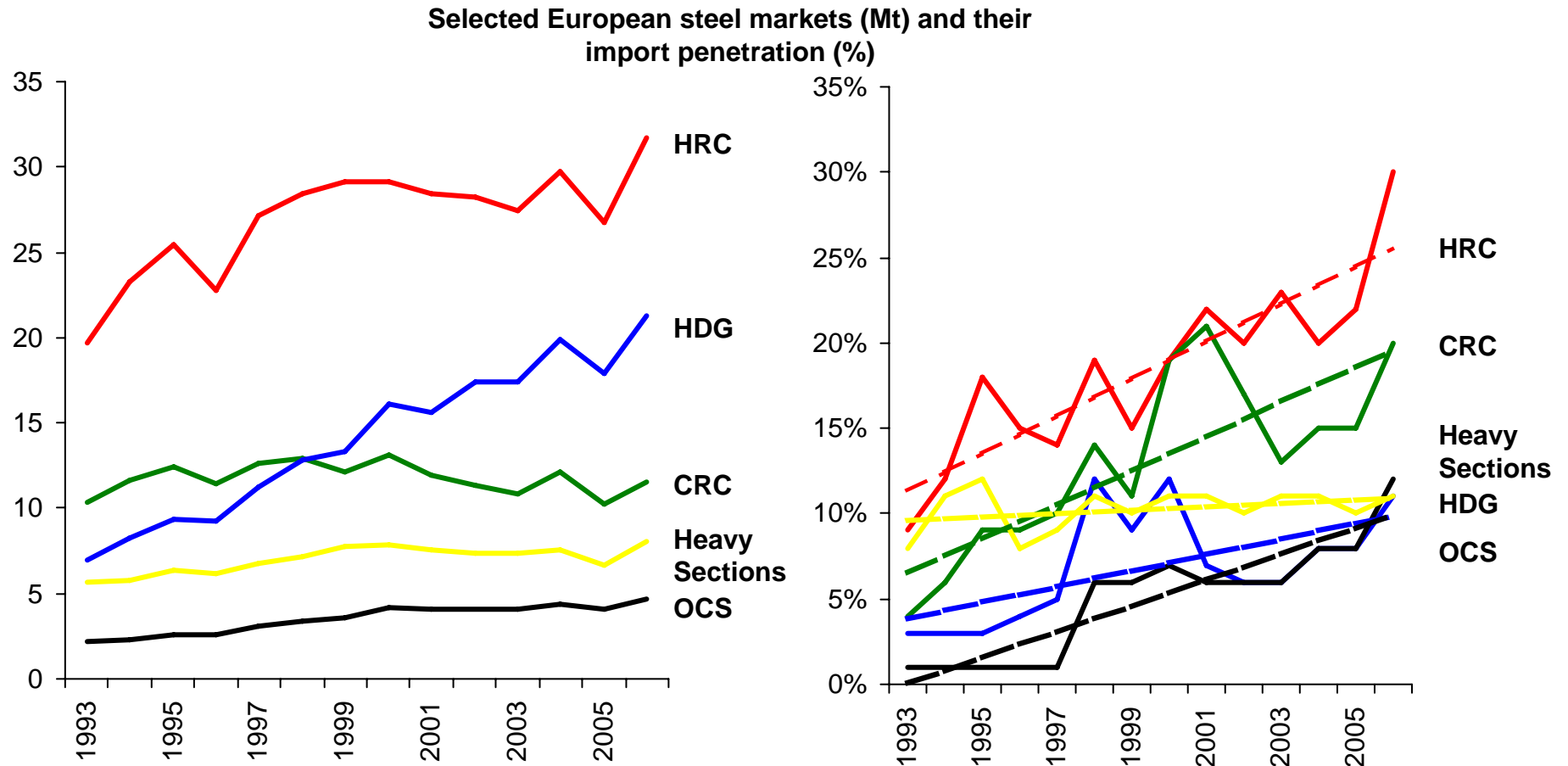
Chinese trade in steel products/Mt



Distribution of Chinese BOF furnace size (t) since 2000



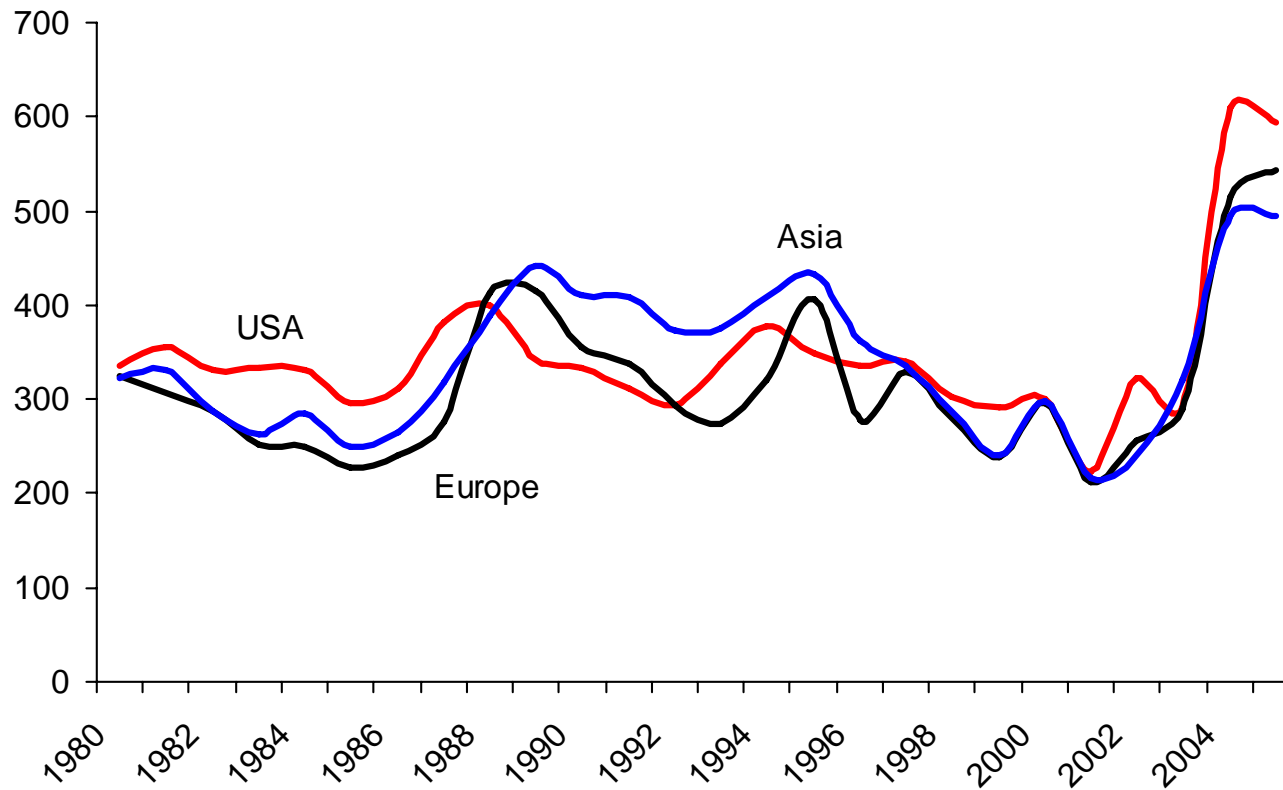
All European flat steel markets, no matter how sophisticated, now face evermore market 3rd country penetration – is their a limit?



OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

Such penetration is driven by regional pricing arbitrage – but only if the consuming regions can use the product in question

Yearly average HRC prices by region (\$/t)



Note: USA: Midwest prices, fob mill. Europe: North European prices, ex-works. Asia: East Asian imports, c&f port.

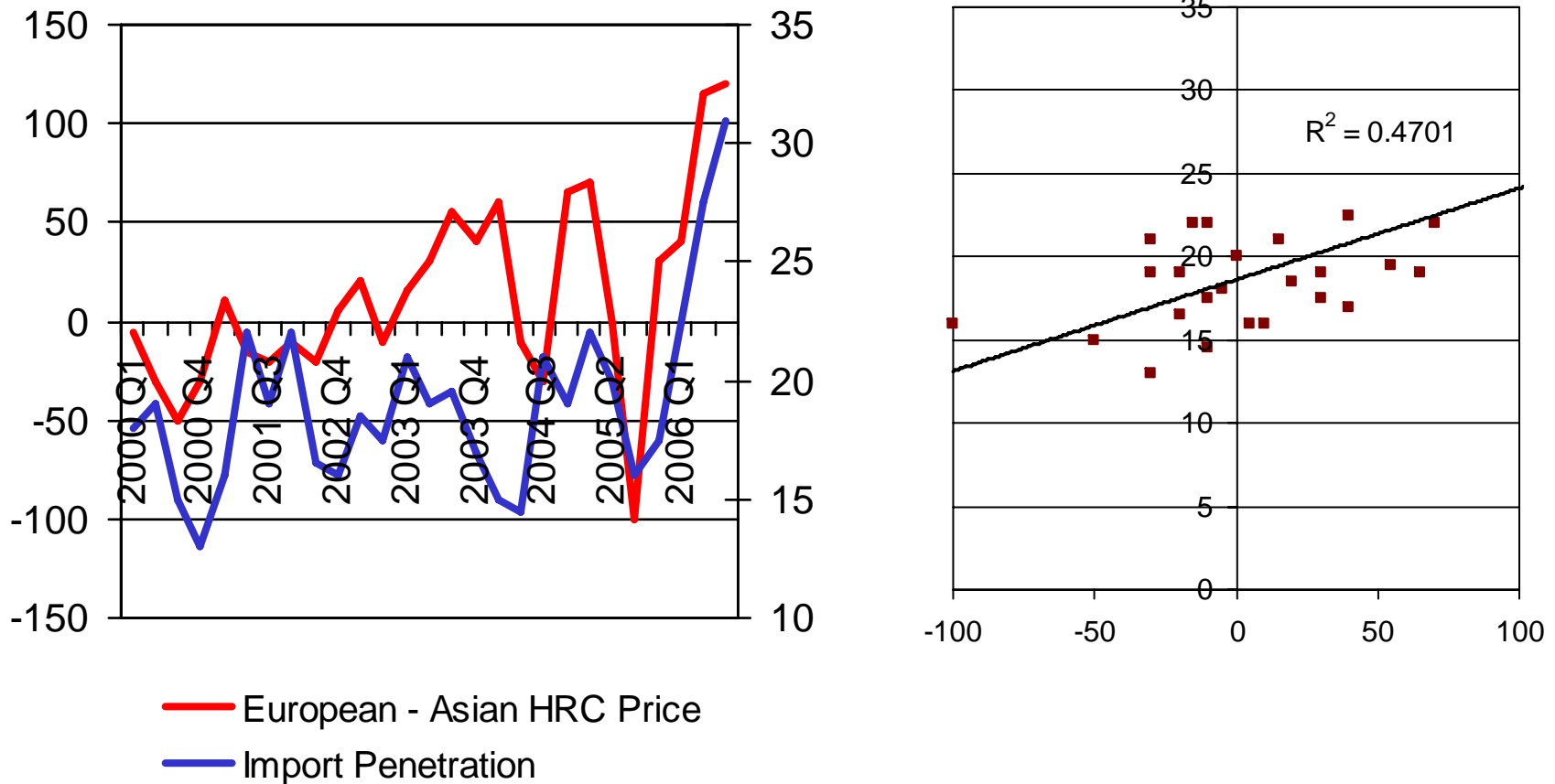
Source: MB, SBB and Hatch Beddows

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OVERVIEW AND OUTLOOK OF GLOBAL STEEL PRODUCTION

Regional price differences based on each regional supply – demand balance are correlated to import penetration – a €50 price differential can drive a 5% change in import penetration:- €50 is very significant for 2 different reasons!!

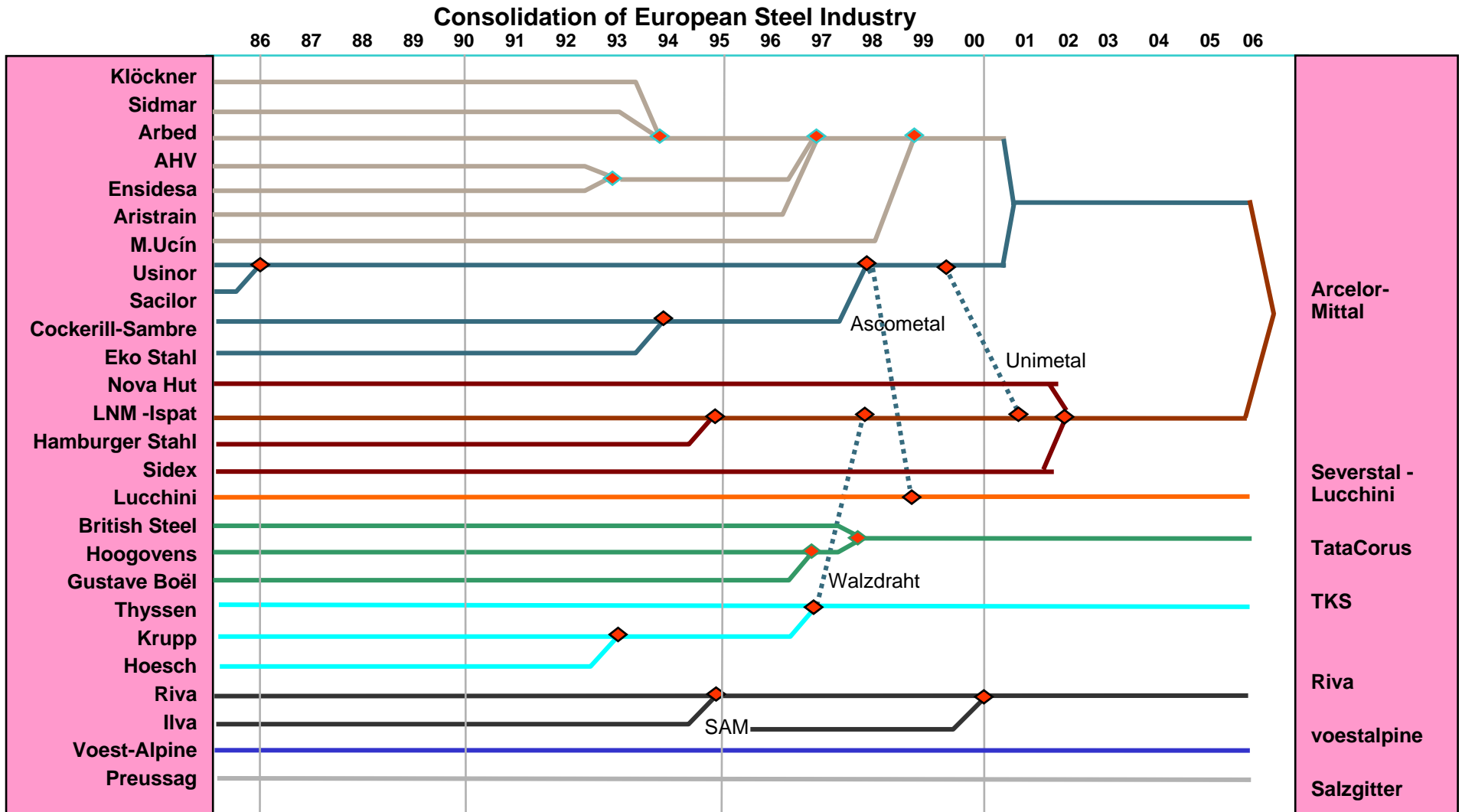
Correlation of European HRC market penetration (RH axis %) and European – Asian price differences shifted by one quarter (LH axis €/t)



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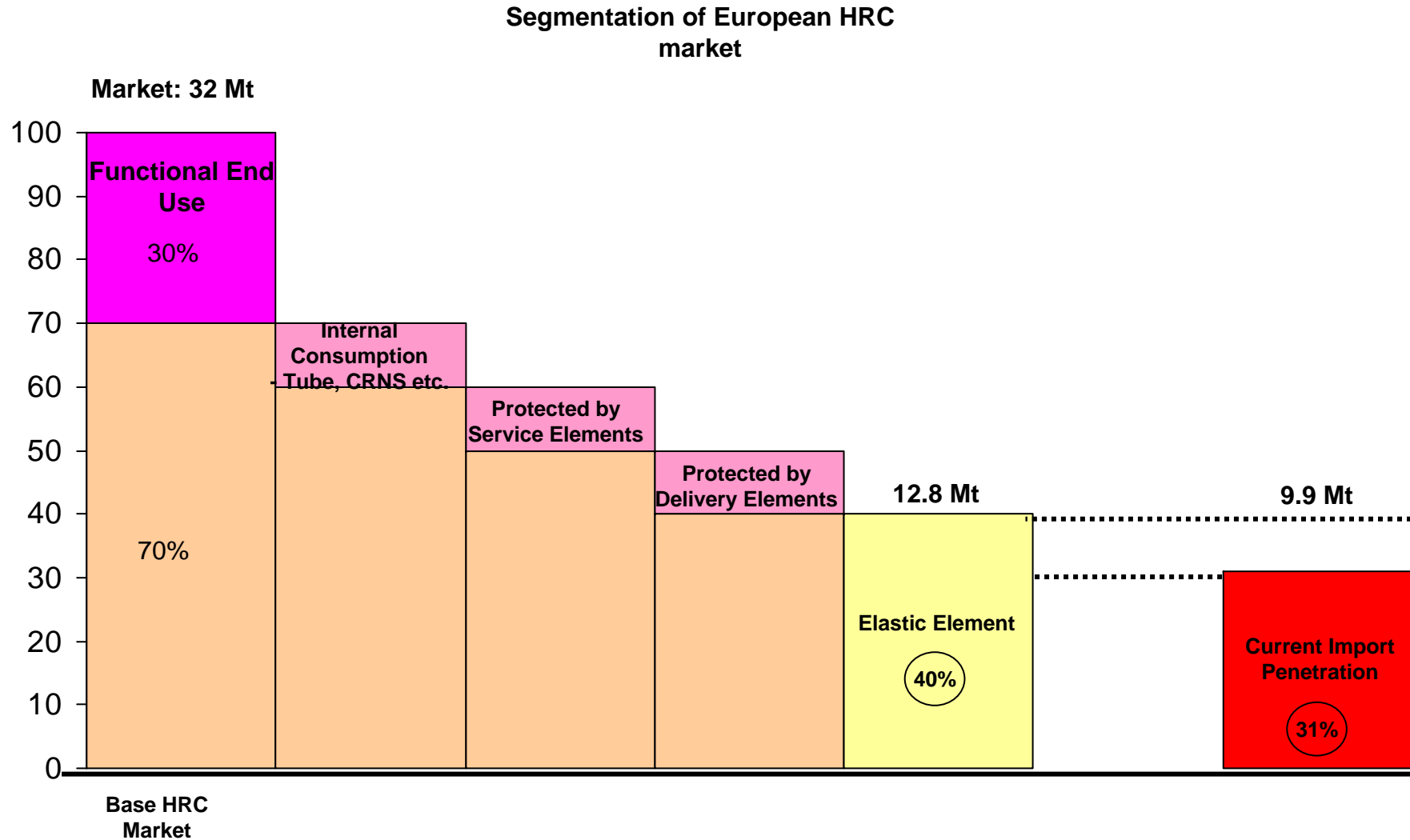
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Pricing discipline through an undisputed multi-regional leader will greatly help

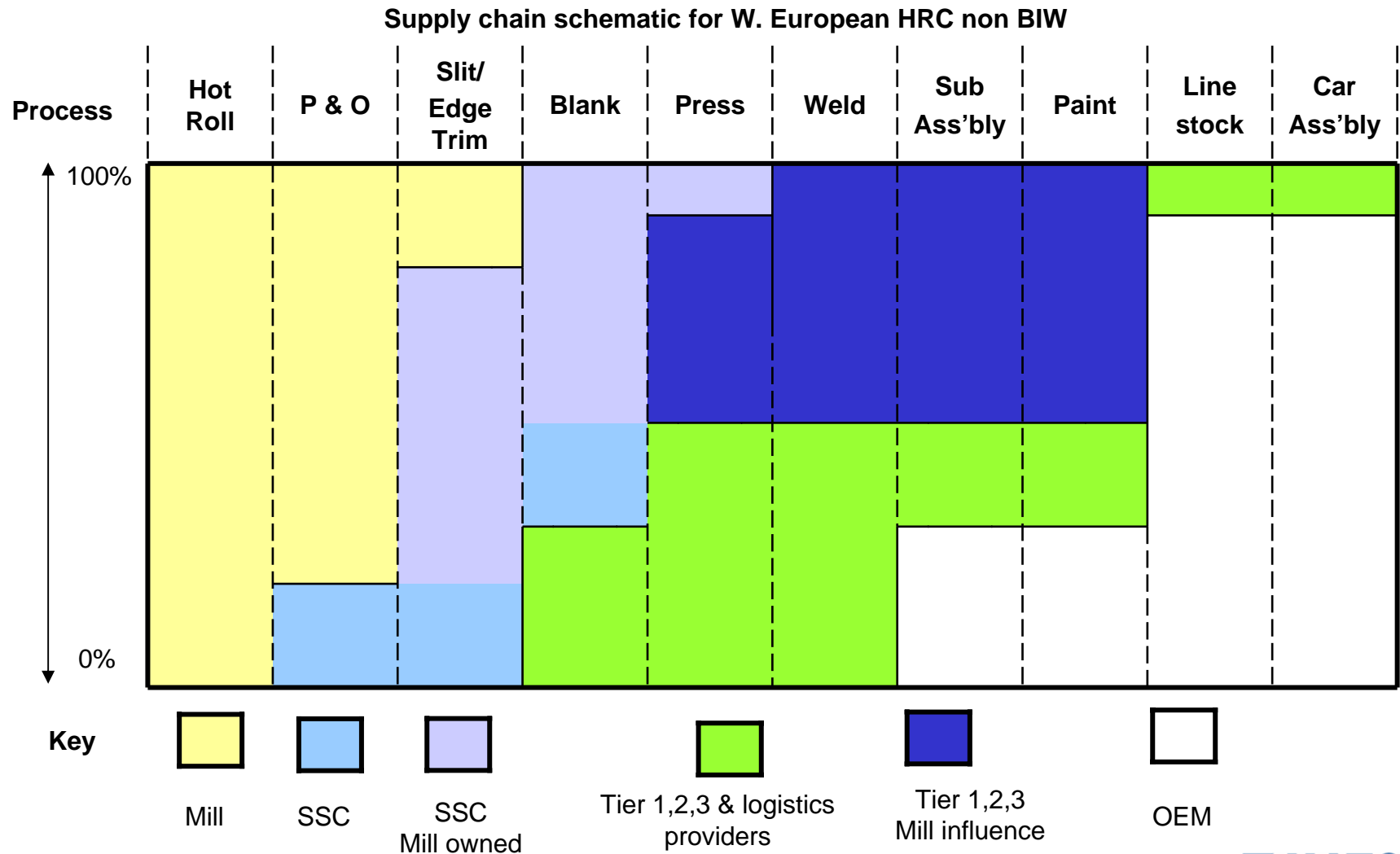


Source: ArcelorMittal, Eurometal and Hatch Beddows

The significant non commodity steel fraction coupled to enhanced service and supply chain also provides protection

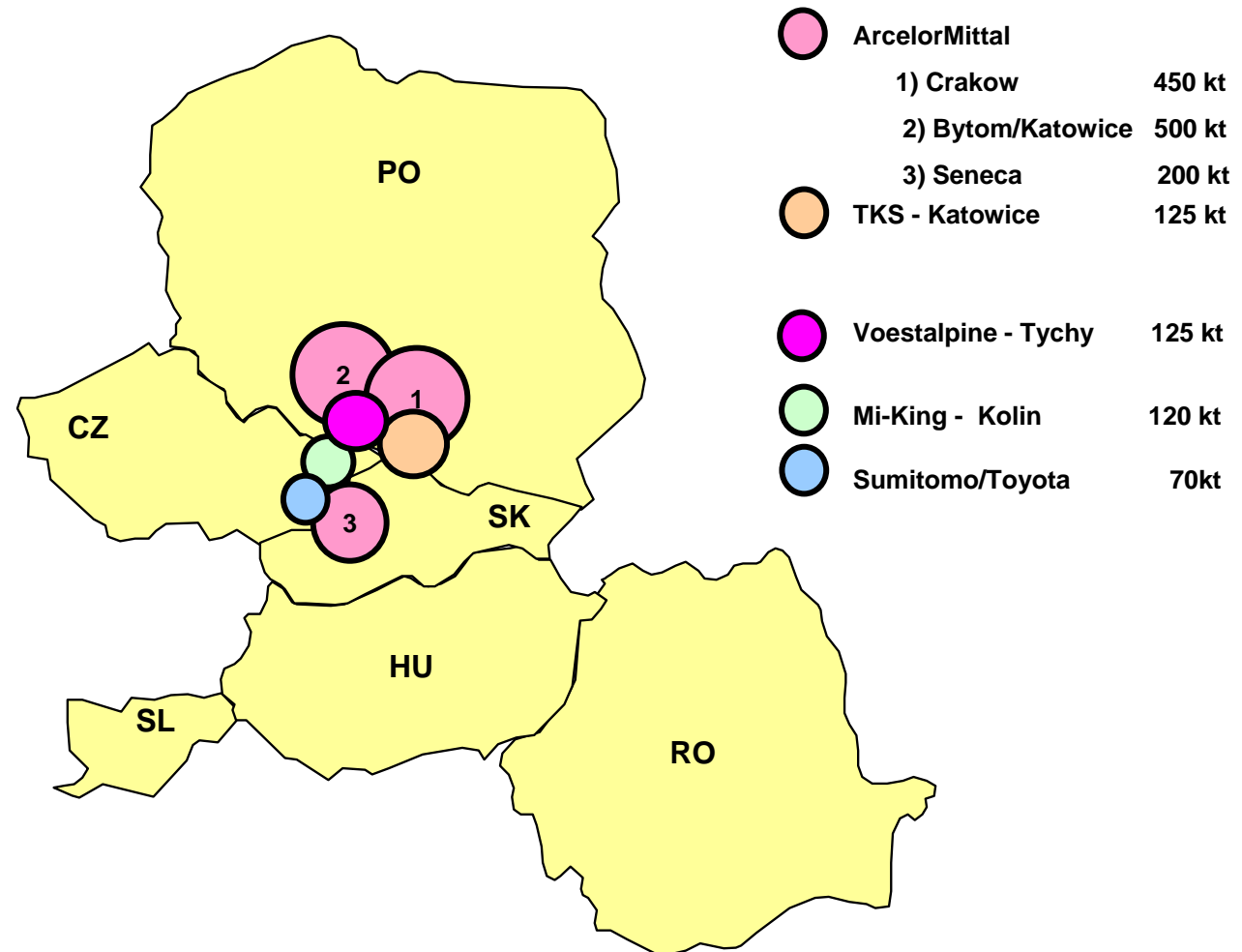


Europe also operates within very sophisticated supply chains that tend to specify European steel and its associated services



Perhaps the last remaining strategic difference between the W. and Central European steel industries is being closed with the creation of a dedicated SSC sector to serve the clustered transplants with steel from W and C. mills

Location of Central European SSCs



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In summary

- The steel industry is no longer Atlantic Basin based, it is Asian in nature, where most growth is anticipated
- A new global cost base has created scope for massive EBITDA variation
- Key factors of production in high-growth steel markets and low-cost steelmaking locations tend to favour the BF / BOF process route
- Trade in steel – inter and intra regional - continues to grow and steel can find a home anywhere in the world far easier than ever before
- All European flat steel markets, no matter how sophisticated, now face evermore market 3rd country penetration
- How can Europe protect its markets?
 - Maintain leadership in steel functionality
 - Maintain leadership in service provision
 - Maintain leadership in commercial marketing
 - Maintain support for established and sophisticated supply chains

QUESTIONS

Thank you

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