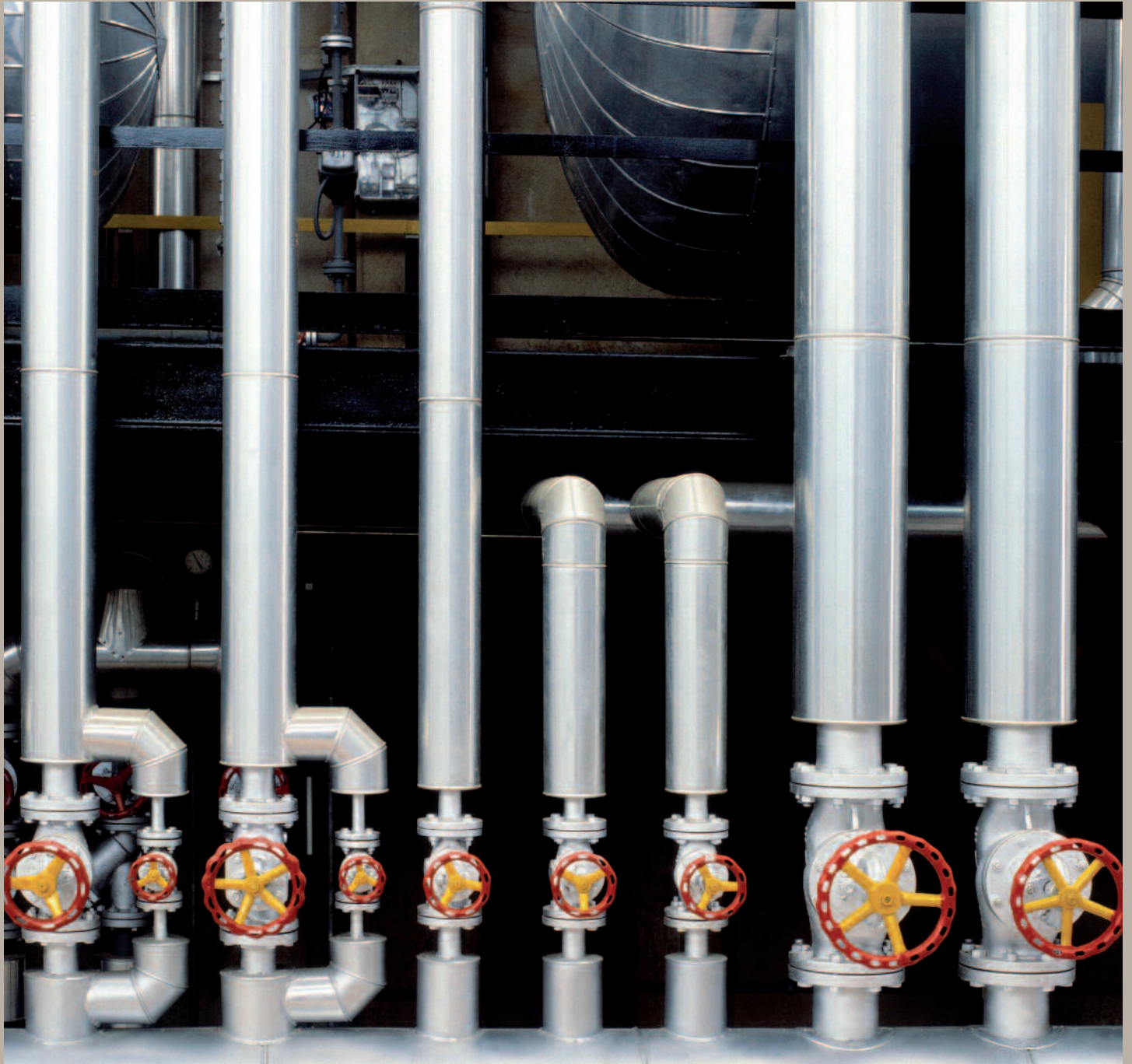


# Forging Ahead\*

Mergers and acquisitions activity  
in the global metals industry, 2005



\*connectedthinking

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## Methodology

Our report provides an analysis of domestic and cross-border deal activity in the metals industry (with the exception of mining transactions). Deal volumes and values are based on published mergers and acquisitions from Bloomberg and mergermarket. Our analysis encompasses announced completed deals for which values have been disclosed.

# Introduction

Welcome to the second edition of *Forging Ahead*. Our report covers mergers and acquisitions in the global metals industry during 2005.<sup>1</sup> It also looks at two issues likely to be critical to the development of the steel sector over the next few years: China's role as a major force in the steel market; and Mittal Steel's bid for Arcelor.

We predicted in our inaugural edition that the industry would continue to consolidate in order to improve its financial strength, increase its operating flexibility and enhance its attractiveness to institutional investors. Our predictions have been borne out. There were 250 disclosed deals in 2005, far surpassing the 166 that occurred in 2004. But the total value of these deals was only \$34.8 billion – 6% less than the \$37 billion that changed hands the preceding year.<sup>2</sup>

The steel sector was responsible for the bulk of the activity, with 165 completed deals collectively worth \$27.4 billion. This was \$4 billion less than the aggregate value of the transactions that took place in 2004, mainly because there were no mega-deals such as the two that produced Mittal Steel, now the world's largest steelmaker. (The merger of LNM Holdings and Ispat International, and subsequent acquisition of International Steel Group, accounted for nearly half the total value that was traded in 2004.)

However, the shockwaves from the creation of Mittal Steel were still spreading in 2005. Towards the end of the year, Arcelor launched a hostile bid for the Canadian Dofasco. Five days later, Germany's ThyssenKrupp stepped in with a white-knight bid, but Arcelor eventually won its prize in January 2006 – only four days before it became the target of a hostile bid from Mittal Steel, the outcome of which has yet to be resolved.

While the leading steel producers continue to jostle for a bigger slice of the global pie, the aluminium sector is already much more consolidated: hence the relative calm. There were 41 completed transactions with a total disclosed value of \$4.2 billion in 2005, down from the \$5.2 billion that was traded in 2004. Conversely, companies involved in the production of other base metals were much busier – with 44 deals collectively worth nearly \$3.3 billion – seven times more than the \$447m that was transacted in 2004.

The emerging markets also played a greater part in the industry's deal-making. Companies based in Central and Eastern Europe, Asia Pacific and Latin America jointly accounted for \$17.7 billion – or 51% of the total value that was transacted worldwide, up from 32% the previous year. We expect this trend to continue, given that industrial production in all three regions is growing much more rapidly than it is in North America and Western Europe, that wages are lower and that the metals industry in such countries as China is still very fragmented.

Last year's edition of *Forging Ahead* was very well received. We hope that you will find this edition equally interesting and useful. If you have any queries about our findings, please contact us. Our third issue, covering deal activity in 2006, will be published in April 2007. All three issues will be available at [www.pwc.com/metals](http://www.pwc.com/metals)



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<sup>1</sup> For the purposes of this document we have defined the metals industry as steel, aluminium and other base metals.

<sup>2</sup> All subsequent references are to US dollars.



# Deal numbers: record volumes

The metals industry continued to consolidate in 2005, as the industry leaders swallowed smaller, less efficient rivals and ramped up their production capacity in the world's fastest-growing regions. There were 250 disclosed deals, a massive increase on the 166 that took place in 2004. But their total value was only \$34.8 billion – marginally less than the \$37 billion that changed hands the previous year (see Figure 1).

Domestic transactions accounted for most of this activity, with 151 deals – up from 99 in 2004. However, the aggregate value of these deals was just \$17.6 billion, down 32% on the \$25.7 billion that was traded the year before. Conversely, both the volume of cross-border deals and their aggregate value rose sharply, with 99 transactions collectively worth \$17.2 billion – over 52% more than the sum that was involved in 2004.

## The steel sector

The steel sector led the way, as it did in 2004, with 165 deals collectively worth almost \$27.4 billion (see Figure 2). The sharp rise in the number of transactions that took place helped to offset the absence of any deals comparable in size to the two that produced Mittal Steel in 2004. The single biggest deal – Mittal Steel's acquisition of the Ukrainian integrated steel producer KryvorizhStal – was worth about \$4.6 billion, barely a quarter of the \$17.8 billion that went into the making of Mittal Steel.

Figure 1: Cross-Border and Domestic Deals in the Metals Industry

	2005				2004			
	Number	Value US\$ bn	Percentage of Number	Percentage of Value	Number	Value US\$ bn	Percentage of Number	Percentage of Value
Cross-Border	99	17.2	40	49	67	11.3	40	31
Domestic	151	17.6	60	51	99	25.7	60	69
<b>Total</b>	<b>250</b>	<b>34.8</b>	<b>100</b>	<b>100</b>	<b>166</b>	<b>37.0</b>	<b>100</b>	<b>100</b>

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Figure 2: Deals by Industry Sector

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
Domestic						
Number	104	25	22	67	22	10
Value (US\$ million)	13,449	2,845	1,971	21,475	3,930	249
Cross-Border						
Number	61	16	22	50	10	7
Value (US\$ million)	13,937	1,307	1,280	9,892	1,245	198
Total						
Number	165	41	44	117	32	17
Value (US\$ million)	27,386	4,152	3,251	31,367	5,175	447

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

As we noted in the previous edition of *Forging Ahead*, the formation of Mittal Steel has changed the landscape of the global steel industry. AME Mineral Economics estimates that the group now has a production capacity of about 69.1m tonnes per year (Mtpy), 41% more than Arcelor, its closest rival. In April 2005, Mittal Steel also reported that it expects to realise purchasing synergies of \$150m a year, manufacturing synergies of at least \$60m a year, operating synergies of \$20m a year and one-time savings of \$60m from its acquisition of International Steel Group.

However, global consolidation is by no means the only factor driving deal-making in the steel sector. Many of the largest deals of 2005 involved manufacturers eager to buy iron ore mines and reduce their raw materials costs. One such example was Mittal Steel's purchase of KryvorizhStal. The company produced 17.1 Mtpy of iron ore in 2004 and has over a billion tonnes of iron ore reserves. Similarly, Ural

Steel and Sitbon Investments bought Mikhailovsky, Russia's second biggest iron ore producer, for about \$1.7 billion. And Arcelor's acquisition of Dofasco brought a welcome side benefit in the form of the 13.6m tonnes of iron ore which Dofasco shipped via its subsidiary, Quebec Cartier Mining, last year.

It is also worth noting the steady rise in acquisition multiples (see Figure 3). The \$4.5 billion Mittal Steel paid for International Steel Group in October 2004 represents \$205 per tonne of capacity. But values per tonne reached as much as \$1,694 in late 2005. The exception to this upward drift was China, where domestic steel prices are some 20% lower than the global average and values per tonne are therefore typically lower than in North America or Europe. We anticipate that this trend will continue until further consolidation removes the country's surplus capacity.

Figure 3: Transaction Values per Tonne in a Selection of Recent Steel Acquisitions

Value of Transaction (US\$ m)	Percentage of Ownership Share	Crude Steel Capacity Mtpy	Value per Tonne	Date Announced	Target Name	Acquirer Name
4,500	100.00	22	205	25-Oct-04	International	Mittal Steel Steel Group
338	36.67	7	132	14-Jan-05	Hunan Valin Steel Tube & Wire	Mittal Steel
2,337	62.00	4	1,019	09-Feb-05	Lucchini	Severstal
2,711	100.00	3	822	18-May-05	Hylsamex	Techint
296	98.96	1	315	08-Aug-05	Vitkovice Steel	Evrast Holding
122	8.00	1	1,694	07-Oct-05	Acesita	Arcelor
4,611	93.02	7	704	24-Oct-05	KryvorizhStal	Mittal Steel
2,960	49.92	4	1,694	02-Nov-05	Eregli Demir Celik Fabrikalari T.A.S. (Erdemir)	Ordu Yardimlasma Kurumu (OYAK)
51	100.00	0.8	64	23-Nov-05	Norambar, Stelfil, Stelwire (Stelco subsidiaries)	Mittal Steel
805	100.00	4.6	175	20-Dec-05	Liuzhou Iron & Steel	WuhanIron & Steel
5,220	100.00	5.0	1,044	15-Jan-06	Dofasco	Arcelor
261	38.41	10.3	66	24-Feb-06	Laiwu Steel	Arcelor

Sources: Bloomberg, mergermarket, AME Mineral Economics, company data and PricewaterhouseCoopers analysis

Note: Transaction values with less than 100% ownership stakes have been grossed up to estimate the total value of production capacity when calculating transaction values per tonne.

## The aluminium sector

The aluminium sector saw much less M&A activity than the steel sector in 2005, as was also the case in 2004. There were 41 deals, compared with 32 the previous year, but their aggregate value was just \$4.2 billion, down from \$5.2 billion in 2004. The single biggest deal was the \$1.8 billion acquisition of Norwegian metals maker Elkem by Orkla, Norway's biggest consumer-goods company. In January 2005, Orkla increased its existing stake in Elkem above the 40% limit that triggers a mandatory offer. It subsequently bought the rest of the shares, ending a long-running battle with Alcoa for control of the company.

The relative calm in the aluminium sector is attributable to the fact that, unlike the steel sector, it has already consolidated to a considerable extent. As we pointed out in the previous edition of *Forging Ahead*, the top five aluminium producers hold double the market share the top five steel-makers enjoy, and production capacity is forecast to change very little from 2005 to 2006. Moreover, most aluminium companies already own bauxite mines and alumina operations, thereby ensuring that they have ready access to the raw materials they require. Nevertheless, several producers entered into alliances to strengthen their position. In April 2005, for example, rival Russian producers RUSAL and the SUAL Group agreed to implement the second stage of the Komi Aluminium project, aimed at increasing bauxite production and constructing an alumina refinery in the Komi Republic with a capacity of 1.4 Mtpy.

The need to secure cheap energy supplies could also spur another bout of M&As. Bear Stearns estimates that higher energy and raw materials costs have already curtailed production capacity by an estimated 500,000 tonnes a year in Europe and the US, as a result of plant closures. In December 2005, for example, Alcoa shut down its East-alco aluminium smelter in Maryland, because its contract with its existing electricity supplier was expiring and the new prices it was being quoted were three times higher than the global average. Indeed, British business analysis and consultancy group CRU estimates that higher energy prices have driven up the cost of producing primary aluminium by \$300 per tonne.

## Other metals

There were another 44 deals between companies involved in the production of other base metals such as non-integrated iron ore, tungsten, molybdenum, copper, metal powder, zinc and lead. The aggregate value of the deals whose values were disclosed was nearly \$3.3 billion – seven times the sum that was traded in 2005.

In February 2005, for example, Kermas – an offshore holding company which owns various chrome and ferroalloy assets in Russia – bought a \$469m stake in Samancor's chrome business. Meanwhile, Glencore International purchased Compania Minera del Sur (Comsur), Bolivia's largest tin and zinc producer, for \$220m. Two months later, Umicore completed the \$358m demerger of its copper activities via an independent, listed company called Cume-rio, and Nordic Capital acquired the Finnish Outokumpu Copper Products for \$771m.

Later in the year, Spanish ferroalloys and electrical power producer Ferroatlantica acquired Alcan's ferroalloy division, Pechiney Electrométallurgie, for \$187m. Japan's Mitsubishi Materials Corporation set up a \$437.5m joint venture with Austria's Plansee Holdings to manufacture sinter products. And Outokumpu sold a 33% stake in mining and smelting business Boliden to unnamed investors in a deal worth \$218.75m.





## Deal makers: a mixed bag of motives

The value of the top ten deals that took place in 2005 was \$19.4 billion – a massive drop on the \$28.5 billion that changed hands in the top ten deals of 2004 (see Figure 4). Mittal Steel led the way, with the acquisition of a 93.02% stake in Ukrainian integrated steel producer KryvorizhStal in October 2005. Renaissance Capital, a leading Russian investment bank, criticised the deal on the grounds that the newly-privatised KryvorizhStal needed a capital injection of \$1 billion, manufactured relatively low value-added products and was heavily dependent on a volatile export market. But Lakshmi Mittal, chairman and chief executive of Mittal Steel, argued that it was a key acquisition. KryvorizhStal “provides us with a large size, low-cost production platform in a core and fast growing market”, he said. It also has substantial iron ore reserves, as we have already noted.

Figure 4: The Top Ten Deals in the Global Metals Industry in 2005

No	Value of Transaction (US\$ m)	Date Announced	Target Name	Target Nation	Acquirer Name	Acquirer Nation	Sector
1 <sup>1</sup>	4,611	24-Oct-05	KyvorizhStal	Ukraine	Mittal Steel	Netherlands	Steel
2 <sup>2</sup>	2,960	02-Nov-05	Erdemir	Turkey	OYAK	Turkey	Steel
3 <sup>3</sup>	2,711	18-May-05	Hylsamex	Mexico	Techint Compania Tecnica Internacional	Argentina	Steel
4	2,337	09-Feb-05	Lucchini	Italy	Severstal	Russia	Steel
5	1,781	10-Jan-05	Elkem	Norway	Orkla	Norway	Aluminium
6	1,696	13-Jan-05	Mikhailovsky	Russia	Private Investors	Russia	Steel
7	1,038	12-Apr-05	Euramax International	US	GSCP Emax Acquisition	US	Steel
8	805	20-Dec-05	Liuzhou Iron & Steel	China	Wuhan Iron & Steel	China	Steel
9	771	05-Apr-05	Outokumpu Copper Products	Finland	Nordic Capital	Sweden	Other
10	723	18-May-05	Metals USA	USA	Apollo Management	USA	Steel

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Notes: <sup>1</sup> Mittal acquired a 93.02% stake in KryvorizhStal on October 24, 2005

<sup>2</sup> OYAK acquired a 49.29% stake in Erdemir through its newly established wholly owned subsidiary Ataer Holdings AS from the Development Bank of Turkey

<sup>3</sup> Techint acquired a 42.5% stake in Hylsamex from Alfa, and the remaining shares from the public shareholders.

However, Mittal Steel was foiled in its bid for a slice of Turkey's biggest steelmaker, Erdemir, when the Turkish armed forces pension fund OYAK beat off both Mittal Steel and Arcelor to secure a 46.12% stake in the company – in the second largest deal of the year. OYAK subsequently bought another 3.17% of the shares in Erdemir, bringing its total expenditure to nearly \$3 billion. (The saga continued in December 2005, when OYAK agreed to offer Arcelor a 41% stake in Ataer Holdings, the wholly owned subsidiary through which it had acquired its position in Erdemir. But in February 2006, it decided to end its partnership with Arcelor and retain all of its stake in Erdemir, after anti-trust concerns were voiced.)

Meanwhile, in May 2005, Argentina's Techint acquired Mexican steelmaker Hylsamex from Alfa, the Mexican conglomerate, for \$2.7 billion. It simultaneously agreed to buy Alfa's stake in Consorcio Siderurgia Amazonia (including Venezuelan steel manufacturer Sidor) for another \$107m. In a reprise of its strategy when it created Tenaris, the world's largest seamless steel pipe producer, Techint has now consolidated these assets in a new company called Ternium, which began trading on the New York Stock Exchange in early 2006.

In February 2005, Russia's Severstal acquired a 62% stake in Lucchini, the family-owned Italian firm, for about \$2.3 billion, furthering the international ambitions that saw it buy Rouge Industries in 2004. The deal will give Severstal an established European platform and a highly complementary range of engineering steel long products. And in December 2005, Wuhan Iron & Steel bought Liuzhou Iron & Steel for about \$805m. Wuhan is now China's third-largest domestic producer, after Baosteel and Anben Iron & Steel.

But geographic expansion was only one of the motives for the big bids of 2005. The \$1.8 billion acquisition of Elkem will enable Orkla to diversify into speciality materials and products more effectively, for example, while the \$1.7 billion acquisition of Mikhailovsky will give it better access to raw materials and make it less vulnerable to takeovers in the rapidly consolidating Russian steel sector.

Private equity firms also played a role in three of the top ten deals. In April 2005, Sweden's Nordic Capital bought the bulk of Finnish Outokumpu Copper Products for \$771m, while GSCP EMAX, a newly formed company set up by Goldman Sachs Capital Partners and certain members of the management of Citigroup Venture Capital, purchased American metal fabricator Euramax International for \$1 billion. Similarly, in May 2005, the US-based Apollo Management supported a \$723m management buyout of metals processor and distributor Metals USA. Clearly, all three investment houses are confident of extracting greater value from the businesses they are backing.



# Deal spread: geographical snapshot

There were 38 cross-continental deals collectively worth nearly \$11.6 billion in the steel sector in 2005, compared with 21 such deals collectively worth just \$7.8 billion in 2004 (see Figure 5). The number of regional steel transactions also increased – from 96 to 127 – but their aggregate value was only \$15.8 billion, 67% of the value that was swapped the previous year. The fall in values is partly explained by the fact that there were no regional deals as big as the merger of LNM Holdings and Ispat International to create Mittal Steel.

The increase in cross-continental dealing reflects the fact that the Western European and North American markets have exhibited far less growth in consumption than the markets of Central and Eastern Europe, Asia Pacific and Latin America. Companies based in these three regions jointly accounted for 50% of the total number of transactions that were completed, and 51% of the total value that was traded, in 2005 (see Figure 6). Central and Eastern Europe proved particularly attractive – with both volumes and values more than doubling relative to 2004, as the leading steelmakers continued to acquire coal and iron ore mines in an effort to control their raw materials costs.

Figure 5: Regional versus Cross-Continental M&As

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
Regional						
Number	127	34	31	96	24	14
Value (US\$ million)	15,807	3,931	2,332	23,603	3,930	441
Cross-Continent						
Number	38	7	13	21	8	3
Value (US\$ million)	11,578	221	919	7,764	1,245	6
Total						
Number	165	41	44	117	32	17
Value (US\$ million)	27,386	4,152	3,251	31,367	5,175	447

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Figure 6: M&A Activity by Continent

	2005				2004			
	Number	Percentage of Total Number	Value (US\$ m)	Percentage of Value	Number	Percentage of Total Number	Value (US\$ m)	Percentage of Value
Central and Eastern Europe	39	16	11,947	34	15	9	5,473	15
Western Europe	58	23	8,687	25	43	26	16,205	44
North America	68	27	8,371	24	44	27	8,978	24
Asia	72	29	4,417	13	49	30	4,568	12
Central and South America	13	5	1,366	4	15	9	1,765	5
<b>Total</b>	<b>250</b>	<b>100</b>	<b>34,788</b>	<b>100</b>	<b>166</b>	<b>100</b>	<b>36,989</b>	<b>100</b>

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis  
 Note: Values of cross-border deals are assigned to companies acquired

Meanwhile, the aluminium sector saw seven cross-continental deals worth \$221m, compared with eight deals worth \$1.2 billion in 2004. Three big transactions, including Alcan's \$560m acquisition of Aluminium Dunkerque, helped to boost the figures that year, whereas even the largest of the disclosed deals that took place in 2005 – the sale of a 25% stake in Global Alumina to Dubai Aluminium (Dubal) – was worth less than half this sum.

#### Central and Eastern Europe

It was a record year for deals in the Central and Eastern European metals industry, with 39 transactions collectively worth \$11.9 billion – more than double the \$5.5 billion involved in the 15 transactions taking place the previous year (see Figure 7). Russia, Ukraine and Poland accounted for much of this activity, thanks to positive economic conditions, greater industrialisation and ongoing privatisation programmes.

Turnover in the steel sector was far higher than it was in the aluminium and other metals sectors, with 27 deals – the largest of which was the privatisation of Erdemir. But several other domestic transactions are also worth a mention. Towards the end of the year, for example, Russia's Novolipetsk Steel (NLMK) struck a two-fold deal to sell its 12% stake in Lebedinsky, which specialises in iron ore mining and processing, to CJSC OEMK-Invest for \$400m; and buy a 25% stake in mining firm KMA Ruda from companies affiliated with Lebedinsky's shareholders. The move has given it a controlling interest in KMA Ruda, and its core mining and steel assets.

NLMK's approach exemplifies the general consensus amongst Central and Eastern Europe producers that vertical integration is the only way to manage rising raw materials costs and remain profitable. We have already mentioned the acquisition of Mikhailovsky in this regard, but Evraz Group's \$675m purchase of a 50% stake in Russian coking coal miner Yuzhkuzbassugol from its core shareholder, Crosland, is another such instance.

Figure 7: M&A Activity in Central and Eastern Europe

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
<b>Domestic</b>						
Number	16	6	2	5	3	0
Value (US\$ million)	6,145	201	107	2,317	1,500	0
<b>Cross-Border</b>						
Number	11	2	2	7	0	0
Value (US\$ million)	5,297	63	133	1,656	0	0
<b>Total</b>						
Number	27	8	4	12	3	0
Value (US\$ million)	11,442	264	240	3,973	1,500	0

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis  
 Note: Values of cross-border deals are assigned to companies acquired

On the cross-border front, Mittal Steel bought KryvorizhStal for \$4.6 billion. Evraz purchased a 98.96% stake in Czech steel plate manufacturer Vitkovice Steel for \$296m, in line with its strategy of expanding outside Russia and diversifying its earnings streams. And Arcelor entered the fast-growing Polish construction sector with the acquisition of the Huta Warszawa steelworks and two scrap metal processors from the debt-laden Lucchini, for \$123m. Arcelor intends to upgrade the existing facilities and install a new bar mill, which is expected to start production in 2007.

Poland was also the locale for the most notable of the eight transactions in the aluminium sector. Polish Enterprise Fund V bought an 80% stake in PPH DGS, the country's leading producer of aluminium bottle tops, for \$122m – in the third-biggest leveraged buyout in the region since the end of the Communist era. Meanwhile, Basic Element was responsible for the largest overseas deal, with the \$63m acquisition of a 65% stake in Kombinat Aluminijuma Podgorica from the Serbian government.

### Western Europe

There were 58 deals collectively worth \$8.7 billion in Western Europe in 2005, compared with 43 deals collectively worth \$16.2 billion the preceding year (see Figure 8). The 46% drop in year-on-year values is directly attributable to the absence of any mega-deals like the creation of Mittal Steel, which single-handedly accounted for 82% of the total value that was traded in the region in 2004.

By far the biggest deal in the steel sector was Russian steelmaker Severstal's \$2.3 billion acquisition of a 62% stake in Lucchini in February 2005. The transaction gives Severstal a strong footing in Western Europe, while Lucchini benefits from a badly needed infusion of cash. The previous month, French tubing manufacturer Vallourec spent \$679m on the remaining 45% stake in Vallourec & Mannesmann Tubes (V&M Tubes), which it bought from its joint-venture partner Mannesmannroehren-Werke, a subsidiary of Salzgitter, Germany's second-largest steelmaker.

Later in the year, Spanish steelmaker Alfonso Gallardo acquired three steel plants with a combined capacity of 1.7 Mtpy from Arcelor for \$386m. Brazilian producer Gerdau also joined forces with the management of Sidenor and a company owned by Spanish bank Santander to buy a controlling interest in Corporacion Sidenor, Spain's main producer of speciality forged and cast steel for automotive parts, for \$520m. And American steel pipe and fittings distributor Edgen Corporation acquired the UK-based Murray International Metals for \$200m, through its principal shareholder, Jefferies Capital Partners. As noted in *Steel Business Briefing*, the deal will better position Edgen as a global supplier of speciality steel products to the oil/gas, process and power generation industries, with more than 3,000 customers worldwide.

Deal-making in the Western European steel sector was alive and well, then, although it failed to match the giddy heights of 2004. Conversely, companies in other sectors were much busier than before. There were 12 transactions collectively worth over \$2 billion in the aluminium sector – a 79% increase on the aggregate value that was swapped in 2004. They included six domestic deals, although values were not disclosed for five of these transactions. (The remaining deal was Orkla's acquisition of Elkem for \$1.8 billion.)

Similarly, there were 14 deals collectively worth more than \$2 billion between companies involved in manufacturing other metals, compared with just five deals with an aggregate value of \$184m in 2004. Swedish private equity firm Nordic Capital led the cross-border dash with the \$771m acquisition of Finland's Outokumpu Copper Products, while Belgian metals processor Umicore took pole position on the domestic front, with the \$358m spin-off of its copper assets into Cumerio. The deal enables Umicore to focus solely on speciality materials. Alcan also continued its programme to divest itself of its non-core operating assets, with the \$187m sale of its ferroalloy division to Spain's Ferroatlantica.

Figure 8: M&A Activity in Western Europe

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
<b>Domestic</b>						
Number	15	6	8	11	4	3
Value (US\$ million)	1,447	1,781	1,045	13,569	240	0
<b>Cross-Border</b>						
Number	17	6	6	17	6	2
Value (US\$ million)	3,157	274	983	1,305	907	184
<b>Total</b>						
Number	32	12	14	28	10	5
Value (US\$ million)	4,604	2,055	2,028	14,874	1,147	184

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Note: Values of cross-border deals are assigned to companies acquired

## North America

Sixty-eight deals took place in the North American metals industry in 2005, more than half as many again as the 44 that occurred in 2004 (see Figure 9). But they were collectively worth only \$8.4 billion, some \$600m less than the \$9 billion that was exchanged the previous year, because there was no transaction equivalent in size to the \$4.5 billion acquisition of International Steel Group.

The biggest cross-border deal in the steel sector was the \$2.7 billion acquisition of Hylsamex by Techint, which represented almost 40% of the total value North America's steelmakers traded in 2005. The remaining transactions were all tiny by comparison. In July 2005, for example, Mexican steelmaker Industrias CH (ICH) bought US special bar quality steel producer Republic Engineered Products for \$229m. Under the terms of the agreement, ICH subsidiary Grupo Simec acquired a 50.2% stake in Republic, while ICH acquired the remaining shares. Grupo Simec is now one of the leading producers of special bar steel in North America, with an annual capacity of nearly three million tonnes of steel. Similarly, in August 2005, the Canadian Atlas Tube agreed to buy Copperweld Corporation, a US manufacturer of steel tubular products, for \$350m. It subsequently sold Copperweld's mechanical tubing and automotive components business to Dofasco for \$178m, in a deal that has expanded Dofasco's tubing capabilities and given it an opportunity to expand its product range into non-automotive niche markets.

The biggest domestic transactions were likewise much smaller than the acquisition of Hylsamex. They included the \$1 billion purchase of metals fabricator Euramax International by GSCP EMAX Acquisition and the \$723m management buyout of Metals USA. In October, US mini-mill Steel Dynamics also bought Roanoke Electric Steel for \$292m, in a move that diversified its product offering in joints, trusses and girders, as well as increasing its steel-making capacity to 5.2 Mtpy. And vertical integration accounted for another significant deal: Dofasco's acquisition of the remaining two-thirds of the shares in Quebec Cartier Mining for \$177m. Dofasco subsequently sold a substantial part of Quebec Cartier via an initial public offering in the QCM Income Fund, but it kept a sufficient stake to hedge its own iron ore purchases.

In the aluminium sector, by contrast, domestic deals, often featuring private equity funds, led the way. In September 2005, for example, Sun Capital Partners made another foray into the metals industry when it bought Indalex Aluminum Solutions Group, North America's second-largest aluminium extruder, from Honeywell International for \$425m, via a holding company set up specifically for the purpose. Canadian private equity firm Superior Plus Income Fund also acquired JW Aluminum, a US producer of speciality flat-rolled aluminium products, for \$350m. And later in the year, Aleris International (which was created when Commonwealth Industries and IMCO Recycling merged in 2004) purchased various assets from Ormet for \$133m. The transaction has increased throughput at its rolling mills and made Aleris more competitive on costs.

The relatively few cross-border deals in the aluminium sector focused mainly on horizontal or vertical integration and were all miniscule, with one exception. In August 2005, Dubal bought a 25% stake in the US-based Global Alumina for about \$200m. The money will be used to support the development and construction of Global Alumina's 2.8 Mtpy alumina refinery in Boké, Guinea, which is scheduled for completion by 2009.

Figure 9: M&A Activity in North America

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
<b>Domestic</b>						
Number	38	4	5	21	8	2
Value (US\$ million)	3,036	587	76	1,764	2,082	50
<b>Cross-Border</b>						
Number	13	3	5	10	1	2
Value (US\$ million)	4,096	550	26	5,076	0	6
<b>Total</b>						
Number	51	7	10	31	9	4
Value (US\$ million)	7,132	1,137	103	6,840	2,082	56

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Note: Values of cross-border deals are assigned to companies acquired

## Asia Pacific

A hefty 72 deals with a total value of \$4.4 billion took place in the Asia-Pacific metals industry in 2005, compared with 49 deals worth \$4.6 billion the previous year (see Figure 10). China alone accounted for a considerable amount of this activity. In July 2005, the Chinese National Development and Reform Commission issued its first real Iron and Steel Industrial Development Policy, documenting the need for consolidation within the domestic steel sector. The following five months saw the completion of eight transactions with an aggregate disclosed value of \$1.1 billion.

One such instance – the largest in China and, indeed, in the region – was the \$805m acquisition of Liuzhou Iron & Steel by Wuhan Iron & Steel. However, overseas companies have also been piling into the country, attracted by the fact that it is the fastest-growing steel market in the world. In September 2005, for example, Mittal Steel completed the year's biggest foreign investment in a domestic Chinese producer, when it secured a 36.3% stake in Hunan Valin Steel Tube & Wire for \$316m. The acquisition gives Mittal Steel a production platform in China, while Hunan Valin Steel Tube & Wire gets access to Mittal Steel's marketing, procurement and technological expertise.

Not that China was the only country to attract interest. In December 2005, India's largest private steelmaker, Tata Steel, acquired Thailand's Millennium Steel for \$414m. Meanwhile, Tata Steel's main domestic competitor, Essar Steel, fulfilled its ambition of becoming a totally integrated steel producer, via the \$450m purchase of a 51% stake in iron ore supplier Hy-Grade Pellets and the whole of Steel Corporation of Gujarat from Stemcor. It also expanded its production capacity, with the \$100m acquisition of two steelmaking facilities from South Korea's INI Steel.

The aluminium sector was markedly quieter than the steel sector, with 14 deals collectively worth \$696m – although this represents a significant increase on trading volumes and values in 2004. A single deal accounted for 57% of the total value that was swapped: Sohar Aluminium, the \$400m joint venture between Alcan, Oman Oil and Abu Dhabi Water & Electricity, is expected to produce 350,000 tonnes of aluminium a year.

Figure 10: M&A Activity in Asia Pacific

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
Domestic						
Number	32	9	7	24	6	5
Value (US\$ million)	1,984	276	51	3,768	108	199
Cross-Border						
Number	11	5	8	11	0	3
Value (US\$ million)	1,077	420	608	485	0	8
Total						
Number	43	14	15	35	6	8
Value (US\$ million)	3,062	696	659	4,253	108	206

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Notes: Values of cross-border deals are assigned to companies acquired

Values from Africa have been assigned to Asia Pacific, since these deals are nominal in value

## Central and South America

There were 13 deals jointly worth almost \$1.4 billion in Central and South America in 2005, compared with 15 deals jointly worth \$1.8 billion in 2004 (see Figure 11). Most of these transactions involved global steelmakers eager to tap into the region's great development potential. Indeed, only the \$220m sale of an 89% stake in Bolivian zinc mining firm Compania Minera del Sur to Glencore International bucked this trend.

Arcelor proved especially lively. In June 2005, it boosted its stake in Brazilian steel producer Companhia Siderúrgica de Tubarão (CST) with the purchase of another 27% of the shares for \$698m; it now has 95% of the voting capital and 73% of the total capital in CST. Shortly afterwards, it announced that it would combine CST with its other Brazilian subsidiaries, Cia Siderúrgica Belgo Mineira and Vega do Sul, to create Arcelor Brasil. And in October 2005, it demonstrated its commitment to Brazil once again, with the \$122m acquisition of a 12% stake in speciality steel company Acesita.

At the end of the year, Arcelor also made its first foray into Central America, when its Brazilian subsidiary bought 50% stakes in two Costa Rican steelmakers, Laminadora Costarricense and Trefileria Colima. Arcelor Brasil will assume operational control of the two companies, even though it does not have a majority stake in either. Meanwhile, Techint agreed to acquire Alfa's stake in Consorcio Siderurgia Amazonia, the holding company of Venezuelan steelmaker Sidor, for \$107m.

Figure 11: M&A Activity in Central and South America

	2005			2004		
	Steel	Aluminium	Other Metals	Steel	Aluminium	Other Metals
Domestic						
Number	3	0	0	6	1	0
Value (US\$ million)	836	0	0	57	0	0
Cross-Border						
Number	9	0	1	5	3	0
Value (US\$ million)	310	0	220	1,370	338	0
Total						
Number	12	0	1	11	4	0
Value (US\$ million)	1,146	0	220	1,427	338	0

Sources: Bloomberg, mergermarket and PricewaterhouseCoopers analysis

Note: Values of cross-border deals are assigned to companies acquired



# Hot metal: China's burgeoning steel industry

## Introduction

It is no secret that China's economy is growing as a result of massive industrialisation, and that the country has become a major force in the steel sector. Real gross domestic product (GDP) rose by 9.5% a year between 1990 and 2004 – and by a still bigger 9.9% in 2005 – although the pace is now thought to be slowing slightly. The Economist Intelligence Unit predicts that the rate of real GDP growth will fall to 8.5% this year, and to 8.2% in 2007.

Industrial GDP has grown even faster; it increased by 12.3% a year between 1990 and 2003, thanks to China's huge investment in production capacity. The World Bank reports that net new investment in fixed capital assets as a percentage of GDP rose from 35% to 44% over the same period. This trend has continued, despite government efforts to rein in such spending and prevent the economy from overheating. In 2005, China's total investment in fixed assets was nearly 8.9 trillion yuan (US\$ 1.1 trillion) – up 25.7% on the previous year.

Chinese steel consumption has increased accordingly; indeed, it has quadrupled since 1998, and the construction industry has played a particularly large part in driving demand. In 2005, it accounted for 62% of total consumption, a pattern that is likely to persist for the next few years, as China invests in vast infrastructure projects like the Three Gorges Dam and gears up for the 2008 Beijing Olympics and 2010 Shanghai World Expo.

Figure 12: The Major Steel-Consuming Industries in China, 2004 to 2006F

Industry	2004	2005		2006F	
	Millions of Tonnes	Millions of Tonnes	Percentage of Change	Millions of Tonnes	Percentage of Change
Construction	175	204	17	233	14
Machinery	45	52	16	57	10
Light industry	25	27	7	29	8
Automotive	13	16	24	19	17
Coal	15	16	8	17	7
Shipbuilding	4	4	23	6	36
Container	4	5	26	5	7
Petrochemicals	3	3	32	4	14
<b>Total</b>	<b>284</b>	<b>327</b>	<b>16</b>	<b>370</b>	<b>13</b>

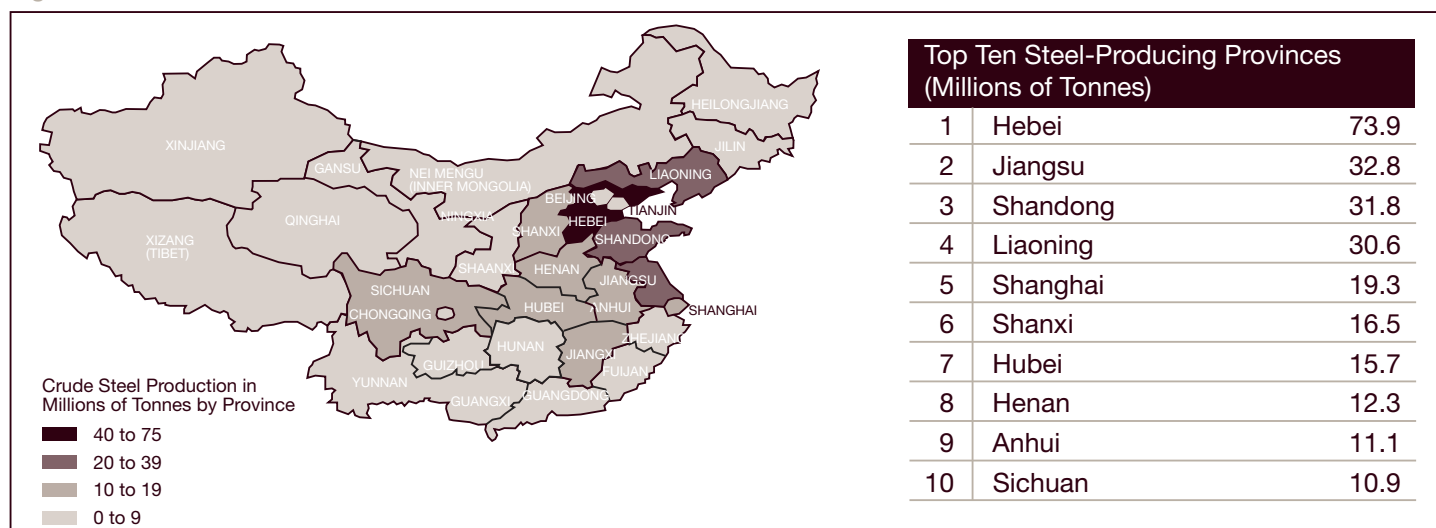
Source: Mysteel.net

However, demand for steel has also been rising rapidly in other industrial sectors. In 2005, for example, consumption soared by 32% in the petrochemicals industry, and by more than 20% in the container, automotive and shipbuilding industries (see Figure 12). The China Iron and Steel Association (CISA), which represents the leading Chinese steelmakers, predicts that the rate of growth will slow down in most sectors this year – with the exception of shipbuilding, where demand is forecast to grow by 36%, as the country makes huge efforts to become a major maritime power. Even so, the big steel-consuming industries are expected to account for a 13% increase in consumption.

The domestic steel sector has been growing at an unprecedented rate to satisfy this apparently insatiable appetite for steel. China now produces more crude steel than the next four largest steelmaking nations combined, with manufacturing concentrated in the eastern and central provinces (see Figure 13). The National Development and Reform Commission (NDRC) reports that another 70m tonnes of capacity will come online in 2006, bringing total capacity to a colossal 540m tonnes.

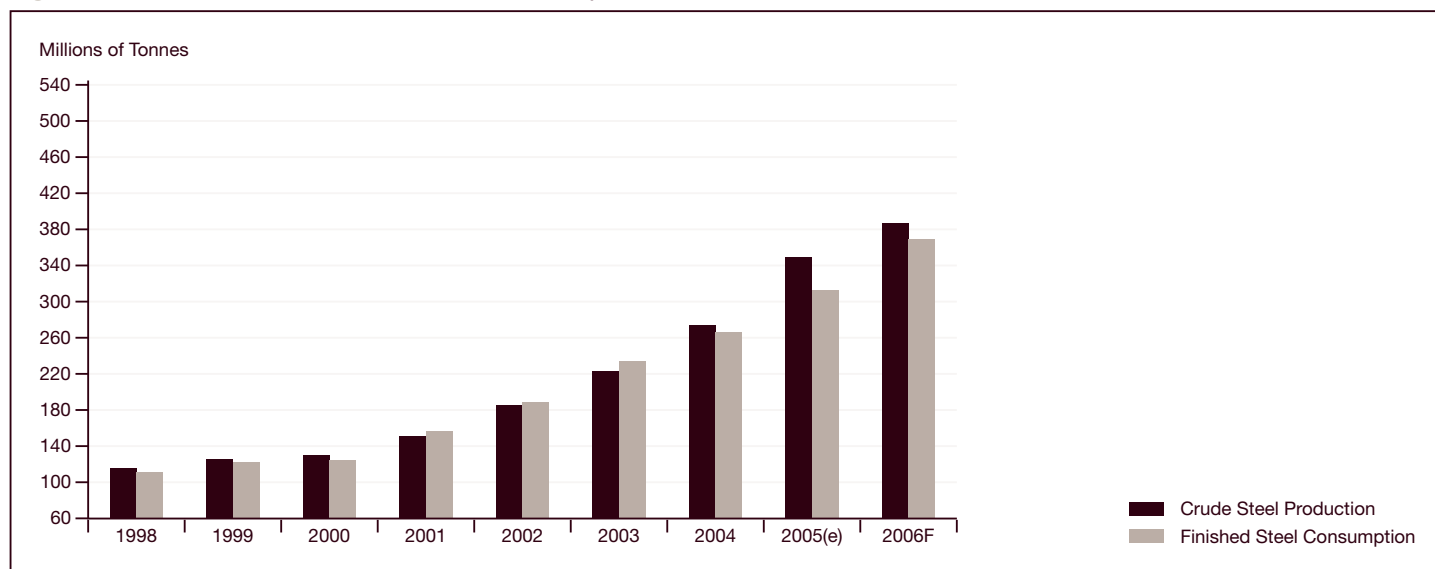
Moreover, as the International Iron and Steel Institute (IISI) notes, much of the industrial development that has taken place so far has been concentrated in the affluent eastern coastal regions, but it is now spreading to other areas. This is likely to boost living standards in some of the poorer parts of the country and stimulate demand for higher grade steel such as sheet steel for use in consumer durables, housing and passenger cars. Hence the fact that China's steel consumption is forecast to rise by 4–5% a year for the next few years, significantly outstripping the 3% by which it is predicted to rise in the rest of the world.

Figure 13: Crude Steel Production in Mainland China, 2005



Sources: Mysteel.net, PricewaterhouseCoopers

Figure 14: China's Steel Production and Consumption, 1998 to 2006F



Sources: International Iron & Steel Institute, CRU International, China Iron and Steel Association, PricewaterhouseCoopers analysis

Yet this rapid expansion has brought its own problems. China is heavily reliant on other countries for high-quality iron ore and, as imports have soared, so prices have rocketed. Energy and transportation costs have also increased. More seriously still, the domestic steel sector is highly fragmented and suffering from overcapacity in certain product areas. All these factors have eroded the industry's profitability – and, if it is to weather such difficulties, it must consolidate.

#### Review of 2005

In 2005, China produced 349m tonnes of crude steel – a 25% increase on the 280m tonnes it produced in 2004 (see Figure 14). It now accounts for 31% of the world's steel output, compared with just 12% in 1995. China's consumption of finished steel products also rose sharply; it reached about 312m tonnes in 2005 – up from 264m tonnes in 2004.

China thus produced a surplus of 37m tonnes of crude steel last year. It also became a net exporter of finished and semi-finished products – with imports of 26.9m tonnes and exports of 27.5m tonnes – reversing the trend of the past decade. However, as bond rating agency Fitch Ratings notes, these positive figures hide a serious structural imbalance: China is still short of high value-added flat products, but now makes a surfeit of low value-added long steel products.

It has traditionally relied on imports of flat-rolled products to satisfy domestic demand, although imports of high-end hot-rolled coil products – which are used in manufacturing cars, ships, home appliances and machinery – have declined in recent years, as Chinese steelmakers have built additional flat production capacity. In 2005 alone, the country invested about \$15–20 billion to expand its flat-rolled capacity in hot-rolled coil by 25 Mtpy, cold-rolled coil by 10 Mtpy and galvanized sheet by 6 Mtpy. As this extra capacity comes online, China will become more self-sufficient, but it currently remains a net importer of flat products.

Conversely, it already has an oversupply of long products (such as wire rods, sections and seamless tubes). Encouraged by the construction boom and rising prices in 2003 and 2004, many small steelmakers invested in new capacity, particularly at the bottom end of the market where the barriers to entry are low. This additional capacity resulted in stockpiling and drove prices down towards the latter part of 2005, leaving some of the mills that expanded a few years ago struggling to service their debts.

In July 2005, the Chinese central government removed the exemption from value added tax (VAT) on exports of steel products, in a move to curb irrational overinvestment in long product capacity. (The exemption was first introduced in 1998, when the prices of Chinese steel products were higher than those on the world market, and downstream Chinese firms imported huge quantities of steel products from foreign suppliers, causing great difficulty for domestic steel producers.) The government also plans to cut approximately 90m tonnes of steel production capacity within the next five years to ease concerns over industrial pollution from illegal expansion and overcapacity.

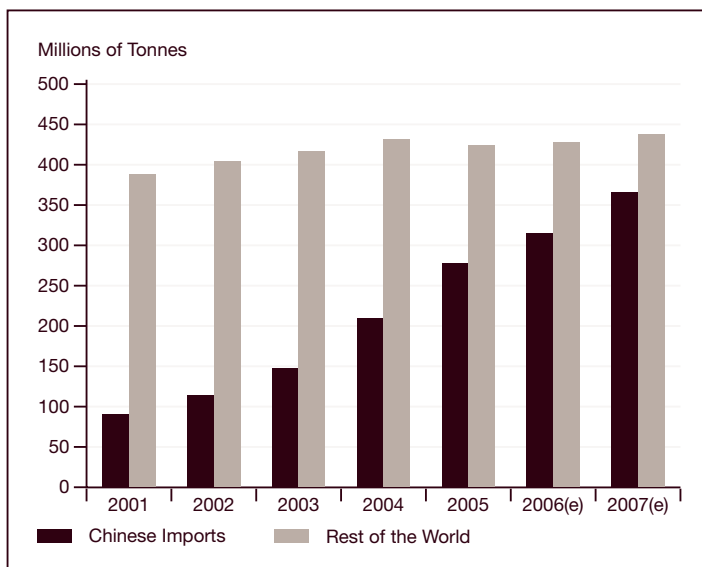
## The rising cost of raw materials

However, this imbalance in production is by no means the only problem China's steel industry faces. Several external factors could likewise hinder its growth. For one thing, the country is now the world's leading iron ore importer; in 2005, imports of iron ore shot up to 275m tonnes – a 32.2% increase on the 208m tonnes that were imported in 2004 (see Figure 15). But global supplies of high-quality iron ore are scarce, and prices have been rising steeply (see Figure 16). Moreover, China's bargaining position is much weaker than that of the iron ore majors. The top three producers – Companhia Vale de Rio Doce (CVRD), Rio Tinto and BHP Billiton – collectively control 76% of the world's iron ore seaborne trade. They thus have far more clout than the 4,800-odd companies which comprise the domestic steel sector.

Some of the leading Chinese steelmakers have therefore started banding together in a move to increase their negotiating power. In February 2005, for example, CISA negotiated a bulk contract with CVRD on behalf of all its member companies. Nippon Steel, Japan's largest steelmaker, had already set the benchmark, when it agreed a 71.5% increase with CVRD earlier that month. But even though CISA secured comparable terms, the price rise still squeezed domestic steelmakers badly. The top 66 manufacturers saw their production costs climb by \$35 per tonne and their combined profits fall by more than 10.6% in 2005.

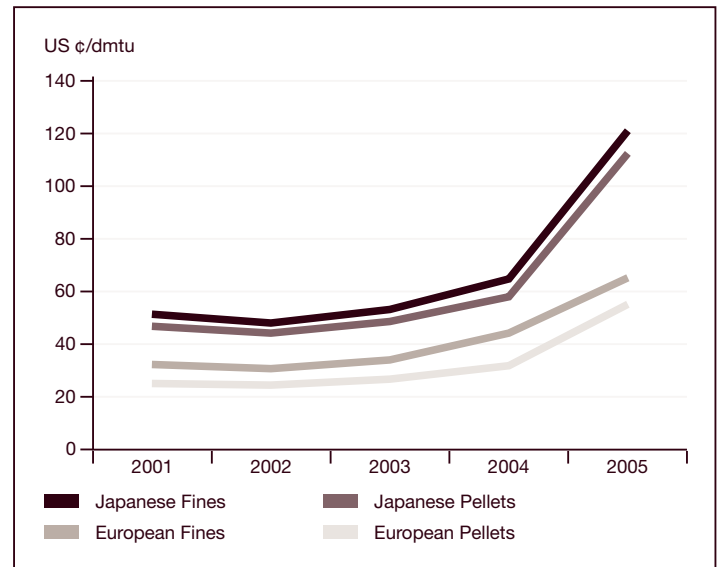
China has now resolved to take a much more active role in the negotiations. Previously, prices were set in discussions between the large iron ore miners and the leading European and Japanese steel companies. But, in early 2006, CISA and the China Chamber of Commerce of Metals, Minerals and Chemical Importers and Exporters appointed Shanghai Baoshan Iron and Steel Corporation (Baosteel) to negotiate on behalf of all Chinese steelmakers, and advised other iron ore importers not to sign individual long-term iron ore contracts with foreign suppliers. The

Figure 15: Chinese Iron Ore Imports, 2001–2007F



Sources: AME Mineral Economics, PricewaterhouseCoopers analysis

Figure 16: Selected Iron Ore Market Prices (Europe and Japan), 2001–2005



Sources: AME Mineral Economics, PricewaterhouseCoopers analysis

biggest Chinese steel companies also agreed to balance demand and supply in order to curb speculative trading in the spot iron ore market and improve the disclosure of information on iron ore imports. And China is seeking to secure iron ore supplies from other sources, such as India and Russia.

Meanwhile, the Chinese Ministry of Commerce announced that it would reduce the number of qualified iron ore importers from 118 to 99, although it has not yet specified the criteria that will apply this year. In March 2006, the government is also reputed to have told the country's steelmakers and traders that it would remove their import licenses if they offered to pay more than \$55 per tonne for iron ore coming from Australia and \$70 per tonne for iron ore coming from Brazil. (The difference reflects higher shipping costs for Brazilian imports.)

At present, however, the dispute remains unresolved. China's steelmakers continue to argue that prices should be kept to 2005 levels, and the government has indicated that it will intervene if the negotiations result in "unacceptable price hikes". Conversely, the iron ore majors insist that prices should be higher because there is a shortage of iron ore, spot prices are strong, and pig iron and steel prices have recently risen while hard coking prices have fallen. Australia's BHP Billiton also claims that it should get the same prices as its Latin American rivals, even though its freight costs are lower.

### Higher energy and transportation costs

Rising iron ore prices have already reduced the profitability of the Chinese steel sector, then, but higher energy and transportation costs have taken their toll as well. China is dependent on coal for 70% of its energy supplies, and coal consumption grew by 10.6% in 2005, driving energy costs up by 9.5%. Prices are likely to rise even further in 2006, since the central government has warned that 40% of the nation's coal mines have been operating in dangerous conditions and must now be closed down.

Similarly, higher oil prices have driven up transportation costs. China's weak infrastructure has also created logistical bottlenecks, although this situation should eventually improve, as its huge programme for constructing new ports comes to fruition. Many steelmakers are then expected to set up factories in port cities, where they can more easily access iron ore imports.

### Fragmentation and overcapacity

But the consolidation of the sector is the real key to its survival – and now one of the central government's most pressing priorities. Between 2002 and 2005, the proportion of total steel output for which the top five steelmakers accounted fell from 31% to 21%, as numerous small producers entered the market (see Figure 17).

Regional loyalties played a large role in the expansion and fragmentation of the steel manufacturing base. As the IISI notes, municipal officials keen to promote their own provinces have often helped local producers to secure cheap loans from the state banks, without regard for the bigger picture. Individual companies have therefore made investment decisions in isolation from their competitors and that, in turn, has led to overcapacity.

In July 2005, the NDRC responded by publishing a new steel industry development policy which calls for vertical, horizontal and regional consolidation to generate economies of scale, cut pollution and increase the competitiveness of Chinese mills. The NDRC stated that it wants to create two major domestic firms with an annual capacity of 30m tonnes each. It also plans to use new environmental, energy and water consumption, and

product quality standards to close 30% of the country's steel capacity – primarily plants manufacturing commodity-based products. In all, it aims to ensure that the top ten steel producers control 50% of domestic production by 2010, and 70% by 2020.

### A spate of mergers

The release of the new policy precipitated a flurry of mergers, as various steelmakers moved fast to secure "strategic producer" status (unofficially defined as at least 10 Mtpy of capacity). However, with one notable exception – the acquisition of the Guangxi-based Liuzhou Iron & Steel by Wuhan Iron & Steel, the leading steel producer in the central province of Hubei – all these deals have been intra-provincial rather than inter-provincial.

In August 2005, China's second-biggest steelmaker, Anshan Iron & Steel, merged with smaller rival Benxi Iron & Steel to create Anben Steel. The deal, which took the form of an agreement to co-operate rather than a cash or equity swap, brought together two companies based in the rust-belt northeastern province of Liaoning. In 2005, they collectively produced 18.4m tonnes of steel, making the new entity second only in size to Baosteel, which produced nearly 23m tonnes.

Three months later, Tonghua Steel, the biggest state-owned enterprise in Jilin Province, joined forces with Jilin Ferro-alloy and private steelmaker Jianlong Steel to form New Tonggang Steel. The value of the deal was undisclosed, but the group's registered capital is almost \$520m and it has an estimated capacity of 10 Mtpy.

China's biggest steelmaking province, Hebei, which produced roughly 20% of domestic output in 2005, has also been implementing an aggressive rationalisation programme. According to the Metallurgical Industry Association of Hebei Province, the municipal government intends to restructure its 202 steel mills into 40 groups over the next five years. It started in November 2005, with an agreement to merge the three state-owned steel giants in northern Hebei – Tangshan Steel, Chengde Steel and Xuanhua Steel – into a new steel conglomerate called Tangshan Iron & Steel, with a combined output of just over 16 Mtpy.

Figure 17: The Fragmented Nature of China's Steelmaking Base

	2005E		2004		2003		2002	
	Millions of Tonnes	Percentage of Total Output	Millions of Tonnes	Percentage of Total Output	Millions of Tonnes	Percentage of Total Output	Millions of Tonnes	Percentage of Total Output
Top 5	74.21	21	63.0	23	56.8	26	56.2	31
Top 10	123.61	35	100.3	37	84.3	38	79.1	43
Top 20	181.63	52	150.8	55	129.6	59	112.7	62
Top 30	214.86	62	179.6	66	152.5	69	126.6	70
Top 40	243.46	70	206.7	76	170.2	77	142.3	78
Others	105.54	30	65.3	24	50.8	23	39.7	22
Total	349	100	272.0	100	221	100	182	100

Sources: AME Mineral Economics, MySteel.net, PricewaterhouseCoopers analysis

That same month investment group CITIC Pacific announced that it would acquire a 65% stake in Shijiazhuang Iron & Steel, the eighth largest steel producer in Hebei, for \$182.7 million. And, in March 2006, Handan Steel acquired private steelmakers Wenfeng Steel and Delong Steel, bringing its total capacity to over 12 Mtpy.

Meanwhile, in January 2006, Baosteel signed a “strategic cooperation agreement” with Magang, in which the two eastern Chinese steelmakers pledged to work together on research and development, marketing, the purchasing of raw materials and technological innovation. Chinese government officials are also promoting two regional deals, under which Baosteel would merge with Bayi Steel, the only large steelmaker in the northwestern region of Xinjiang; and Shougang would merge with Tangshan Iron & Steel. Shougang has already entered into an \$8.3 billion joint venture with Tangshan Iron & Steel to build a steel plant on a tiny island in the Bohai Sea, as part of its long-standing plans to relocate from Beijing to the neighbouring Hebei Province.

However, this is just the start. Even with the transactions that have already taken place, the top five producers still account for only 28% of domestic steel output, so it is clear that much more consolidation will be required – and that will take many years (see Figure 18). In the meantime, China’s steel mills will have little control over prices.

Figure 18: The Impact of China’s Steel Mergers to Date

	2005 (with Mergers) <sup>1</sup>		2005	
	Millions of Tonnes	Percentage of Total Output	Millions of Tonnes	Percentage of Total Output
Top 5	98.55	28	74.21	21
Top 10	137.51	39	123.61	35
Top 20	184.47	53	181.63	52
Top 30	217.70	62	214.86	62
Top 40	243.46	70	243.46	70
Others	105.54	30	105.54	30
<b>Total</b>	<b>349</b>	<b>100</b>	<b>349</b>	<b>100</b>

Sources: AME Mineral Economics, MySteel.net, PricewaterhouseCoopers analysis

Note: <sup>1</sup> These figures represent the combined 2005 output of companies that have merged, as discussed above

Moreover, politics is likely to play a larger part than commercial wisdom in determining how the industry evolves. Government intervention will ensure that the big state-owned enterprises continue to absorb smaller rivals with weaker political backing. But many of the mergers that have occurred to date have been “forced marriages” whose real value is at best doubtful. They have not been subjected to proper due diligence procedures and there are no guarantees that they can deliver the synergies which have been claimed for them.

In short, mergers alone will not solve the Chinese steel industry’s problems. If it is to thrive in the 21st century, the municipal authorities will have to put aside their local loyalties, institute specific policies to close down the most inefficient mills and address the problem of over-employment. The leading players will also have to improve their technology and management skills.

#### Foreign presence

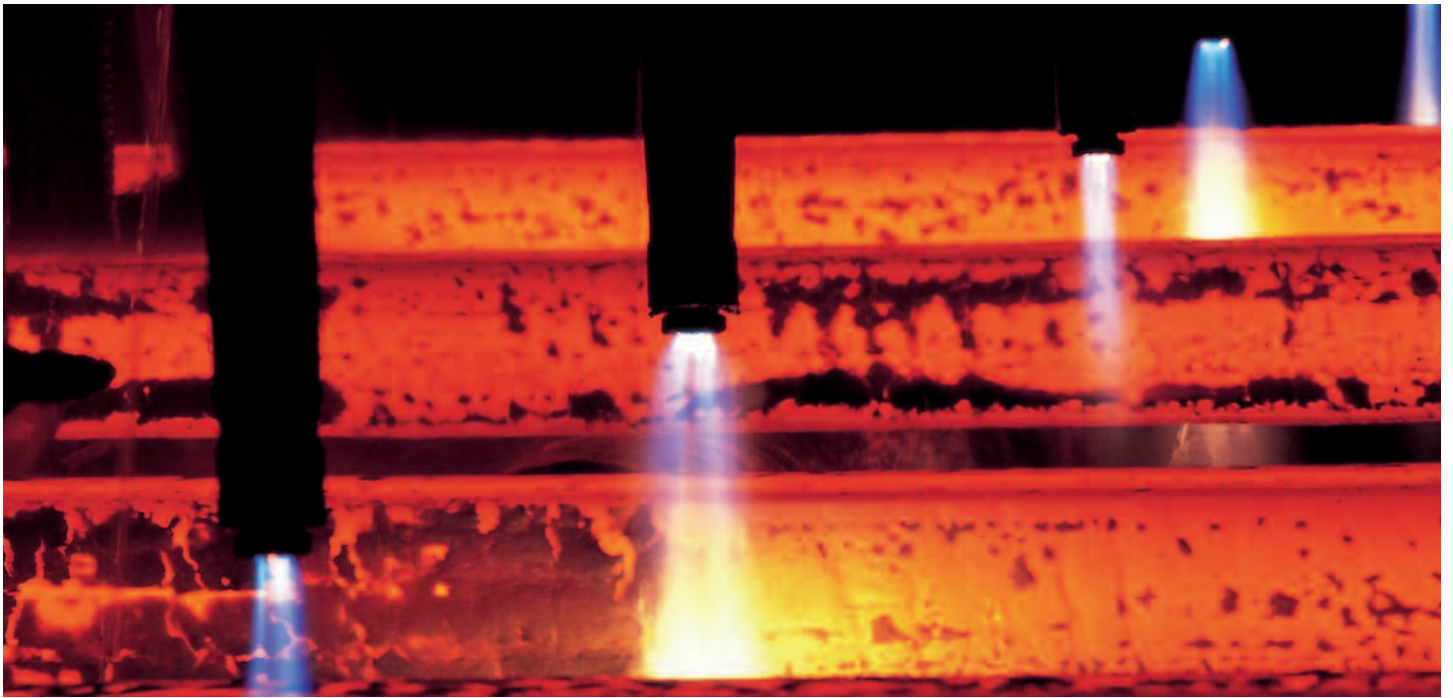
The Chinese central government seems to recognise this. Although foreign investment in the domestic sector is restricted “in principle”, the government is still encouraging overseas companies to enter the arena and share their expertise. Such are the attractions of the market that interest is keen. Arcelor estimates that 60% of the global growth in demand for steel will come from China between 2006 and 2020, and that it will account for roughly 30% to 40% of total consumption.

The leading foreign steelmakers have already been talent-spotting. In September 2005, for example, Mittal Steel completed the acquisition of a 36.3% stake in Hunan Valin Steel Tube & Wire, based in the southeast Hunan Province. It has also been in talks with Kunming Iron & Steel, which is located in Yunnan Province, and with Batou Iron & Steel, a medium-sized steelmaker in Inner Mongolia.

Similarly, in February 2006, Arcelor bought a 38.4% stake in Laiwu Steel, China’s largest H-section steelmaker. Chief executive Guy Dollé confirmed at the time the deal was announced that Arcelor was also in discussions with Yinshan and Qingdao Iron & Steel, and hoped to conclude another deal in China within the next 18 months. Both Arcelor and ThyssenKrupp have likewise been in talks with Handan Steel, which is looking for overseas financial support for a 4.6 Mtpy integrated steel project.

#### Conclusion

The Chinese steel sector is thus sure to be a significant source of deal-making over the next few years. The central government has made it clear that the industry must consolidate, and that it wants the four leading domestic steelmakers – Baosteel in the eastern provinces, Shougang in the northern provinces, Anben Iron & Steel in the northeastern provinces and Wuhan Iron & Steel in the central provinces – to play a major role in this process. The big foreign steelmakers are equally eager to tap the opportunities China offers; they know that, as China reduces its imports and ramps up its capacity, they will have to improve their ties with domestic producers to cash in on its growth.



## The first truly global steelmaker?

Mittal Steel's €20 billion (\$25 billion) hostile bid for Arcelor, launched in late January 2006, created uproar. As the world's second-largest steelmaker, Arcelor is more accustomed to being the predator than the prey – and the two companies are now slugging it out to the bitter end. So what are the arguments for and against the proposed merger, and what would it deliver if Mittal Steel pulls it off?

Mittal Steel argues that the deal would generate \$1 billion of synergies by 2008, \$600m from greater purchasing power and \$200m each from marketing and manufacturing. It also claims that the merger would be complementary in terms of product portfolios and geographic spread; Mittal Steel has extensive assets in China, India, Eastern Europe and central Asia, while Arcelor is strong in Western Europe and Brazil.

Meanwhile, Arcelor argues that the two companies have totally different business models, and that Mittal Steel is more interested in its cash flow than the company itself. Arcelor has already delivered €700m of synergies since it was created through the three-way merger of Usinor, Aceleralia and Arbed in 2002. It claims that Mittal Steel's strategy of buying rundown steel plants in developing countries is exhausted, and that it needs to invest very heavily to move from producing commodity steel to producing high-tech, high-value products as Arcelor does. It also points to its strong balance sheet, investment programme and newly acquired presence in China as evidence that it is more attractive alone than it would be if merged with Mittal Steel.

Arcelor has now adopted a number of measures intended to thwart the takeover bid. It has, for example, transferred the shares of its Canadian subsidiary Dofasco into a “foundation” which operates under Dutch law and has sole control over any decision to sell Dofasco. It is also actively wooing its shareholders. In February 2006, chief executive Guy Dollé and his board raised the company’s normally cautious payout ratio by boosting the 2005 dividend to €1.20 a share. Two months later, they lifted the dividend for a second time, to €1.85 a share – a tactic designed both to keep investors sweet and to make the bid less attractive by reducing the proportion that is payable in cash.

In May 2006, Arcelor offered shareholders yet another carrot, when it announced plans for a €5 billion share buy-back programme, under which it would purchase as many as 150m shares at a maximum price of €50 a share. This move should enable it to mop up some of the shares held by speculative investors who have bought into the company since Mittal Steel announced its bid. Arcelor estimates that about 15–20% of its shareholders are short-term investors.

The politicians, of course, have also had their say. Arcelor has a worldwide workforce of about 98,000 people, some 40,000 of whom are based in France, and the French government has expressed considerable fears about potential job losses. Lakshmi Mittal, the chief executive and majority shareholder in Mittal Steel, has responded with a round-the-clock diplomatic campaign to win Europe’s top policymakers over to his cause.

The battle is still raging, then, and at this point it is impossible to predict the outcome. But what would a combined Mittal-Arcelor look like?

Bringing the world’s two leading steelmakers under one roof would create a business with \$69 billion worth of sales, 320,000 staff and 10% of the global market. With total production forecast to reach 118m tonnes this year, such a company would be over three times bigger than Nippon Steel, JFE Steel and Posco – the next largest manufacturers. Indeed, it would be bigger than all three together. The new company would also be one of the largest iron ore producers – so much so that it could supply 50% of its own iron ore needs by 2010. And with a market capitalisation in the region of about \$40 billion, it could probably lower its cost of capital considerably.

If the deal goes ahead, it would also be a significant step in the direction of global consolidation, a trend that is widely recognised as necessary to stabilise the sector. With production concentrated in the hands of a smaller circle of steelmakers, output could be more effectively regulated and prices stabilised. In theory, at least, upheavals such as the doubling of steel prices between 2002 and 2004, and 35% collapse in 2005, would then be impossible.

This is certainly why many analysts seem to buy the logic of a tie-up between the two companies. As US investment bank Morgan Stanley noted in late January 2006, the “creation of the first 100 Mtpy steel producer is expected to be positive for steel pricing, with more effective production discipline balance against historically sharp inventory cycles, and it should reduce price volatility”.

Yet even if Mittal Steel succeeds in securing Arcelor, the top five producers would still account for only 21% of the world’s output – barely half the level the top five iron ore and aluminium majors control (see Figure 19). Thus further consolidation is essential, whether or not Mittal Steel gets its way. If it becomes the first truly global steelmaker, however, the pressure on other steel companies to consolidate will be huge.

Figure 19: The Impact of a Mittal-Arcelor Combination

Steel Producers	Assuming Mittal/Arcelor Deal 2006 (Forecast) Millions of Tonnes	2006 (Forecast) Millions of Tonnes	2005 Millions of Tonnes	Assuming Mittal/Arcelor Deal Supply Share 2006 Percentage	Supply Share 2006 Percentage	Supply Share 2005 Percentage
New Co. <sup>1</sup>	118.1			10.0		
Mittal Steel	N/A	69.1	60.1	N/A	6.0	5.0
Arcelor	N/A	49.0	47.5	N/A	4.0	4.0
Nippon Steel	34.5	34.5	32.3	3.0	3.0	3.0
JFE Steel	31.6	31.6	31.4	3.0	3.0	3.0
Posco	32.9	32.9	32.0	3.0	3.0	3.0
Baosteel	23.8	23.8	N/A	2.0	N/A	N/A
<b>Total</b>	<b>240.9</b>	<b>240.9</b>	<b>203.3</b>	<b>21.0</b>	<b>18.0</b>	<b>18.0</b>
<b>World Total</b>	<b>1,179.0</b>	<b>1,179.0</b>	<b>1,132.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources: AME Mineral Economics, PricewaterhouseCoopers analysis

Note: <sup>1</sup> We have combined the estimated 2006 production output of Mittal and Arcelor

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