

The cover features a white background with several vertical bars and images. On the left, there is a tall orange bar and a shorter blue bar. In the center, there is a tall orange bar and a shorter blue bar. On the right, there is a tall orange bar and a shorter blue bar. The images show various types of steel scrap: a rusted metal surface with a bolt, a gear, and a pipe; a bundle of rebar; and a close-up of a metal joint.

WORLD STEEL RECYCLING IN FIGURES 2006 – 2010

Steel Scrap – a Raw Material for Steelmaking



Bureau of
International Recycling
Ferrous Division

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FOREWORD

The second edition of our BIR Ferrous Report “World Steel Recycling in Figures” shows that, in the aftermath of recession, 2010 proved to be an excellent year for the ferrous recycling industry.

In our second edition, we have published more scrap usage information. In addition to the EU, the USA and Turkey, we have compiled scrap consumption figures for steelmaking in China, Japan and Russia.

We are still dependent on estimates for many areas of the world. So we have updated our calculation model for the entire use of steel scrap in steelmaking and, for the first time, we are able to present a calculation model for global scrap use in iron and steel foundries.

According to our calculations, global scrap use in steelmaking has been between 460m and 540m tonnes per annum in recent years while its annual use in iron and steel foundries has amounted to between 56m and 76m tonnes.

We have also provided more information about the world trade in steel scrap and have completed our second edition with an overview of 2010 steel scrap export prices for the USA and the EU.

It is also worthy of note that some credible forecasts suggest annual world steel production will reach 2bn tonnes in not so many years from now. And even if BOF production accounts for most of the increase,





there are enough EAF expansion plans worldwide for us to ask the question: “Will there be sufficient scrap to cover ever-increasing steel production?” For the answer to this question, we must continue to improve the steel scrap statistics at our disposal such that we are able to make a more accurate appraisal of the market.

I would like to extend special thanks to Rolf Willeke, the BIR Ferrous Division’s Statistics Advisor, who compiled, prepared and evaluated all the figures in our report. Beginning this year, he will update these world statistics every three months.

We hope that our report “World Steel Recycling in Figures 2006-2010” will be useful in your daily business operations.

Brussels, May 2011

Christian Rubach

President of the BIR Ferrous Division

EXECUTIVE SUMMARY

Figures for 2010 show that the ferrous metal market was very positively affected by the new record for global crude steel production.

In the aftermath of the recession, world crude steel production reached 1.412bn tonnes in 2010. This represented an increase of 14.8% over 2009 and a new record for global steel production. All the major steel-producing countries and regions showed double-digit growth in 2010, while the EU and North America had higher growth rates due to the lower base effect from 2009.

Looking at the main scrap-using countries (which are named in this report), statistics from worldsteel confirm that China's crude steel production reached 626.7m tonnes last year for an increase of 9.3% over 2009; the country's share of world crude steel production declined from 46.7% in 2009 to 44.3% in 2010. Japan produced 109.6m tonnes of crude steel last year, or 25.2% more than in 2009, while the EU recorded an increase of 23.9% to 172.6m tonnes and the USA a leap of 38.3% to 80.5m tonnes. Also in 2010, Russia achieved crude steel production of 66.9m tonnes and Turkey of 29.1m tonnes for year-on-year increases of, respectively, 11.5% and 15.2%.

In collaboration with experts from the German Steel Federation (WV Stahl), we calculate a global scrap consumption for world steel production of around 530m tonnes for last year – an increase of 15.2% compared to 2009. But our figures reveal that steel scrap usage in some parts of the world – including the EU (+18.4% to 95.8m tonnes), the USA (-3.8% to 51m tonnes) and China (+4.3 % to 86.7m tonnes) – failed to keep pace with the respective growth in steel production.

The main reason for this development in the EU and the USA is that electric arc furnaces (EAFs) producing construction steels consume 100% steel scrap but were operating at lower rates. Furthermore, for the US market, EAFs producing hot rolled coil were operating near 90% capacity, but by using around 40% iron alternatives.

China is attracting particular attention regarding its scrap usage. And for the first time, we have received from China's Association of Metalscrap Utilization (CAMU) the scrap consumption figures relating to the country's crude steel production over the last five years. We have learned that, between January and September last year, Chinese steel mills consumed on average 140 kg of scrap in making a tonne of steel compared to 146 kg for the whole of 2009. As the world's biggest steel producer, developments in China have contributed substantially to a reduction in the world

rate of steel scrap use to crude steel production from 43.9% in 2000 to 37.5% in 2010. But China's steel industry as a whole should be attempting to increase scrap consumption per tonne of steel produced to 227 kg during the country's Five-Year Plan running from 2011 to 2015.

Also worthy of note for 2010 was the increase in steel scrap use for steelmaking in Japan (+28.9% to 38.4m tonnes), Russia (+50.4% to 20.6m tonnes) and Turkey (+17.7% to 25.3m tonnes). Scrap contributed 86.4% of the material used in Turkish steel production last year compared to a world average for 2010 of 37.5%.

According to our calculations, steelworks' own arisings, or circulating scrap, made a smaller gain than production in rising 11.8% to 190m tonnes last year as a result of mills' efforts to improve yields through the wider use of continuous casting and of near-net-shape casting. At the same time, the increase in global pig iron production was lower than the jump in crude steel production. Our calculation model reveals that scrap purchases by steelworks worldwide increased by 17.2% to 340m tonnes last year, of which 32.4% was attributable to the supply of new steel scrap (process scrap) and 67.8% to old steel scrap (capital scrap). These figures highlight that quality-assured processing of scrap is becoming more and more important.

For the first time, we are able to present a calculation model for global scrap use in iron and steel foundries. We have produced this in collaboration with experts from the German Foundry Association (BDG), which is also responsible for the Secretariat General of the European Foundry Association (CAEF). Our calculations cover the period from 2006 to 2009; it was not possible to incorporate 2010 figures because world casting production is determined only by US magazine "Modern Casting" with a time lag of one year. It should also be pointed out that our calculation model takes into account the high pig iron usage for casting production in the iron and steel foundries of China and India.

For the years 2006 to 2009, we have calculated a global scrap use of between 56m and 76m tonnes for iron, steel and malleable casting production of between 67m and 79m tonnes per annum. During this time, foundries' annual scrap purchases amounted to between 35m and 47m tonnes.



Also worthy of note are remarkable changes in world trade of steel scrap when comparing 2010 and 2009, with developments influenced mainly by a sharp drop in Chinese scrap imports and a strong increase in deliveries to Turkey. Chinese imports fell by 57.3% or 7.8m tonnes to just 5.9m tonnes in 2010, with the result that China lost its position as the world's second largest importer of steel scrap. India's scrap imports also fell in 2010: statistics for the January-September period show that its overseas purchases of steel scrap declined 24.6% to 3.2m tonnes. Thailand's steel scrap imports also dropped, by 3.1% to 1.3m tonnes.

On the plus side, Turkey's steel scrap imports amounted to 19.2m tonnes last year (+22.5%) and enabled the country to maintain its position as the world's leading importer. Also positively, South Korea's scrap imports jumped 3.7% in 2010 to 8.1m tonnes while the total received by Taiwan soared 37.1% to 5.4m tonnes. South Korea has now assumed the position of the world's second biggest steel scrap importer. Our statistical report also shows positive scrap import moves in Malaysia (+36.2% to 2.3m tonnes) and Indonesia (+10.6% to 1.6m tonnes).

The impact of last year's decline in China's steel scrap imports will have been felt most keenly in the USA and in Japan. Looking at the main steel scrap exporters in 2010, Japan's outgoing volumes declined by a very steep 31.1% to just under 6.5m tonnes, with its shipments to China dropping 45.5% to 2.7m tonnes. The USA's overseas shipments fell some 8.4% to 20.6m tonnes, mainly as a result of the sharp decline in deliveries to China (-48.3% to 3.2m tonnes) and to India (-38.2% to 976,000 tonnes). Conversely, America's shipments to Turkey climbed to 4.4m tonnes (+18.3%).

Adding in Canada's export deliveries (+7.6% to 5.2m tonnes), North America's steel scrap shipments almost topped 26m tonnes in 2010. And despite the negative export result last year, the USA held on to its position as the world's leading exporter of steel scrap.

Meanwhile, the importance of the EU as a supplier of steel scrap has grown significantly in the last five years, with exports rising almost 9m tonnes over this period. This positive development has been influenced very strongly by Turkey: the EU exported approaching 19m tonnes (+20.2%) last year, with Turkey the biggest buyer



on 10.7m tonnes (+44.4%). It is also interesting to note last year's upturn in EU steel scrap shipments to India (+5.7% to 2.1m tonnes) and to Egypt (+191% to 1.6m tonnes).

Finally, Russia followed up a sharp decline in 2009 by vastly improving its export performance in 2010, with deliveries surging 98.9% to 2.4m tonnes. Turkey was again the most significant outlet in taking 1.1m tonnes (+216.8%).

It is interesting to note that all of the world's leading steel scrap exporters are major net steel scrap exporters. In 2010, the export surplus for the USA was 16.8m tonnes and for the EU 15.3m tonnes.

Meanwhile, figures for 2010 show that steel scrap prices (as illustrated in the export prices of the USA and the EU) remain volatile. This emphasises that steel scrap as a raw material is an international commodity subject to world market prices.

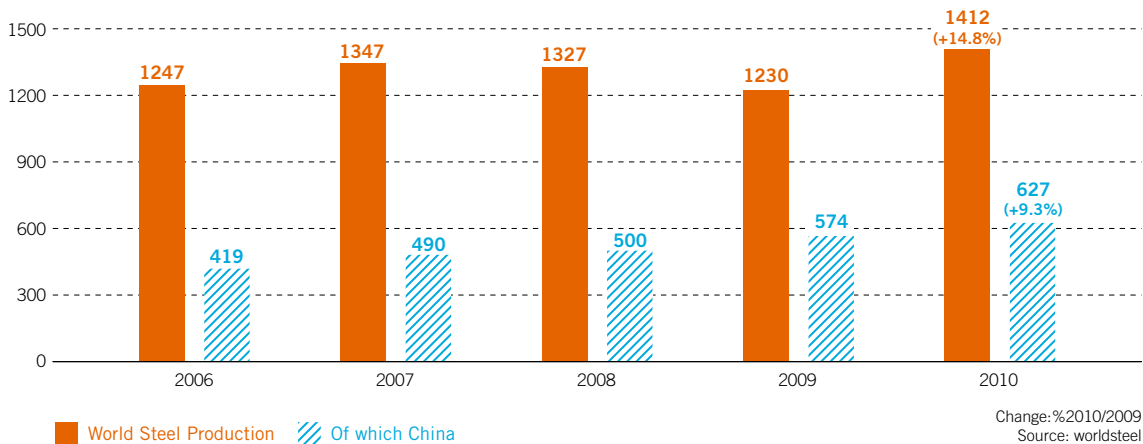
CONCLUSION

- According to our calculations, global scrap use in steelmaking has been between 460m and 540m tonnes per annum in recent years, while its annual use in iron and steel foundries has amounted to between 56m and 76m tonnes.
- Applicable also to deep-sea business, the demanding of higher-quality scrap has also been noted. Quality-assured processing of scrap is becoming more and more important.
- The huge world trade in steel scrap last year further underlines the need for a free raw materials market.
- The figures for 2010 show that steel scrap prices remain volatile.
- Market developments in 2010 highlight not only the importance of scrap as a global raw material for steelworks and foundries, but also the ecological benefits of steel and casting recycling.

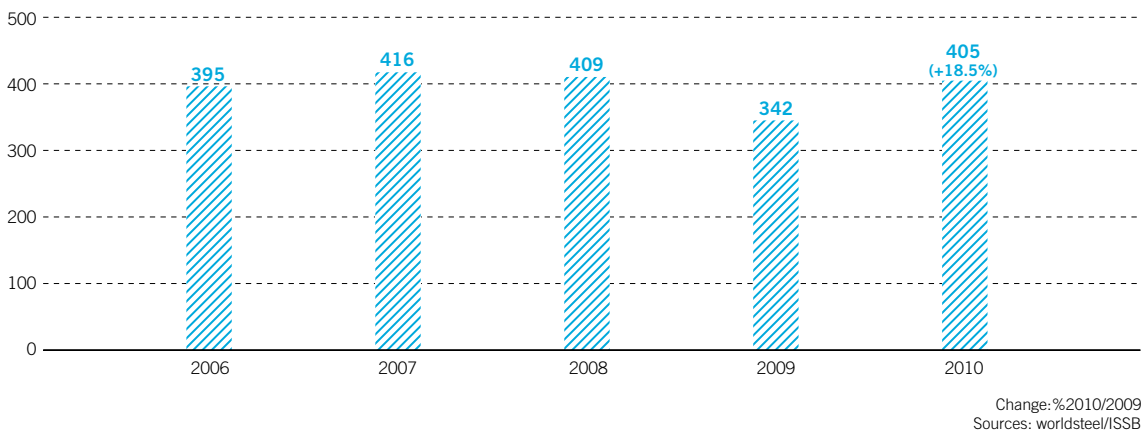
Rolf Willeke

Statistics Advisor of the BIR Ferrous Division

WORLD CRUDE STEEL PRODUCTION (MILLION TONNES)



WORLD EAF PRODUCTION (MILLION TONNES)



TOTAL METALLICS FOR STEELMAKING IN THE WORLD (MILLION TONNES)

| | 2006 | 2007 | 2008 | 2009 | 2010 | % 2010/ 2009 |
|---|--------------|--------------|--------------|--------------|--------------|-----------------|
| Crude Steel Production | 1247 | 1347 | 1327 | 1230 | 1412 | +14.8 |
| of which Oxygen (BOF) | 820 | 901 | 890 | 863 | 988 | +14.5 |
| Electric (EAF) | 395 | 416 | 409 | 342 | 405 | +18.5 |
| (Share EAF of Crude Steel) in % | 31.7 | 30.9 | 30.8 | 27.8 | 28.7 | |
| Pig Iron | 880 | 961 | 935 | 914 | 1028 | +12.5 |
| (Ratio Pig Iron/Crude Steel) in % | 70.6 | 71.4 | 70.4 | 74.4 | 72.8 | |
| Steel Scrap | 500 | 540 | 530 | 460 | 530 | +15.2 |
| (Ratio Steel Scrap/Crude Steel) in % | 40.1 | 40.1 | 39.9 | 37.6 | 37.5 | |
| DRI | 60 | 67 | 68 | 64 | 65 | +1.6 |
| (Ratio DRI/Crude Steel) in % | 4.8 | 5.0 | 5.1 | 5.1 | 4.6 | |
| Total Metallics | 1440 | 1568 | 1533 | 1438 | 1623 | +12.9 |
| (Ratio Total Metallics/Crude Steel) in % | 115.5 | 116.5 | 115.4 | 116.9 | 114.9 | |

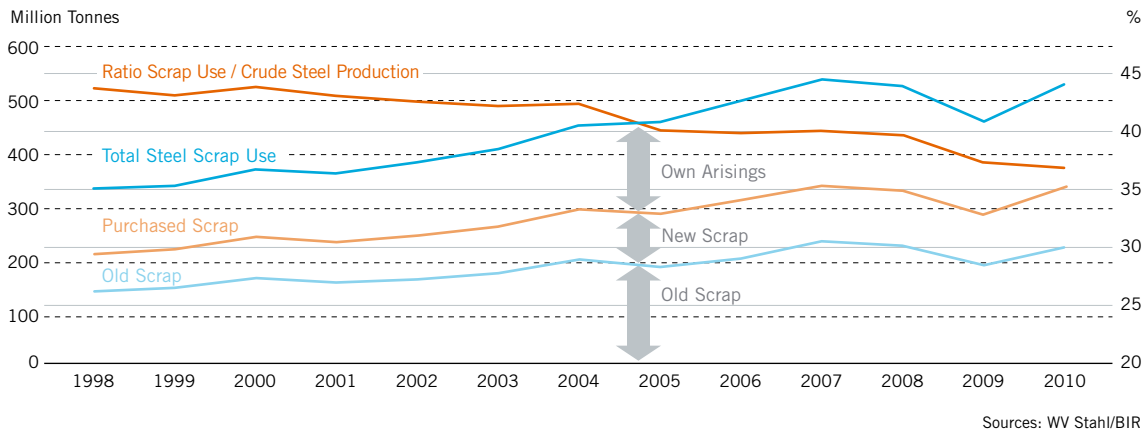
Sources: worldsteel, Midrex and own calculations by WV Stahl/BIR

STEEL SCRAP FOR STEELMAKING IN THE WORLD (MILLION TONNES)

| | 2006 | 2007 | 2008 | 2009 | 2010 | % 2010/ 2009 |
|--|-------------|-------------|-------------|-------------|-------------|-----------------|
| Crude Steel Production | 1247 | 1347 | 1327 | 1230 | 1412 | +14.8 |
| Total Steel Scrap Use | 500 | 540 | 530 | 460 | 530 | +15.2 |
| (Share Scrap Use/ Crude Steel) in % | 40.1 | 40.1 | 39.9 | 37.6 | 37.5 | |
| of which: | | | | | | |
| Own Arisings (Circulating Scrap) | 185 | 197 | 195 | 170 | 190 | +11.8 |
| (Share Own Arisings of Scrap Use) in % | 37.0 | 36.5 | 36.8 | 37.0 | 35.9 | |
| Purchases by Steelworks | 315 | 343 | 335 | 290 | 340 | +17.2 |
| (Share Purchases of Scrap Use) in % | 63.0 | 63.5 | 63.2 | 63.0 | 64.2 | |
| of which: | | | | | | |
| New Steel Scrap (Process Scrap) | 109 | 107 | 105 | 95 | 110 | +15.8 |
| (Share New Steel Scrap of Total Purchases) in % | 34.6 | 31.2 | 31.3 | 32.8 | 32.4 | |
| Old Steel Scrap (Capital Scrap) | 206 | 236 | 230 | 195 | 230 | +17.9 |
| (Share Old Steel Scrap of Total Purchases) in % | 65.4 | 68.8 | 68.7 | 67.2 | 67.8 | |

Sources: worldsteel and own calculations by WV Stahl/BIR

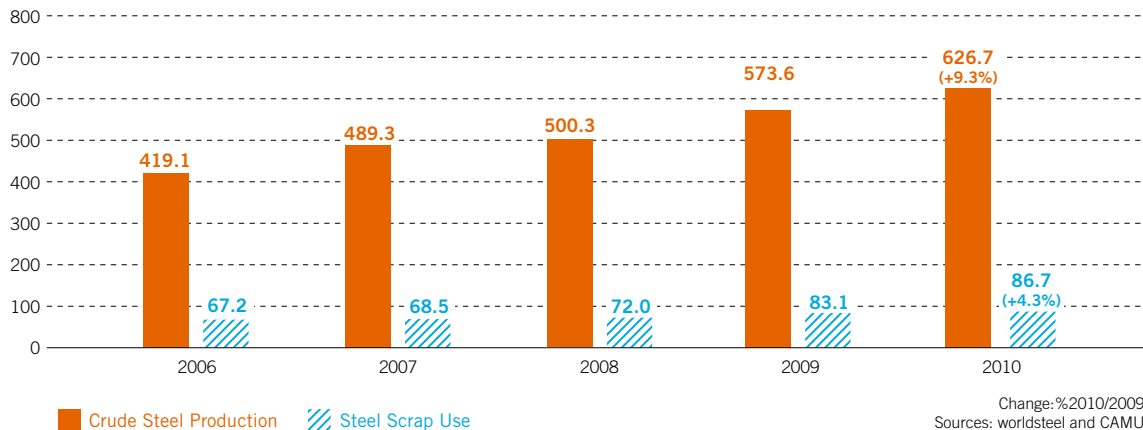
STEEL SCRAP FOR STEELMAKING WORLDWIDE



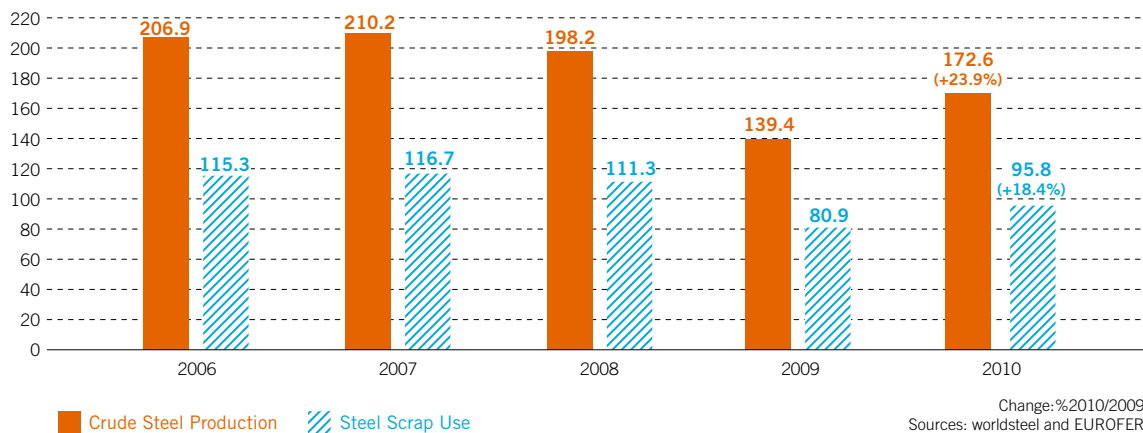
WORLD CRUDE STEEL PRODUCTION, STEEL SCRAP USE AND PURCHASES (MILLION TONNES)



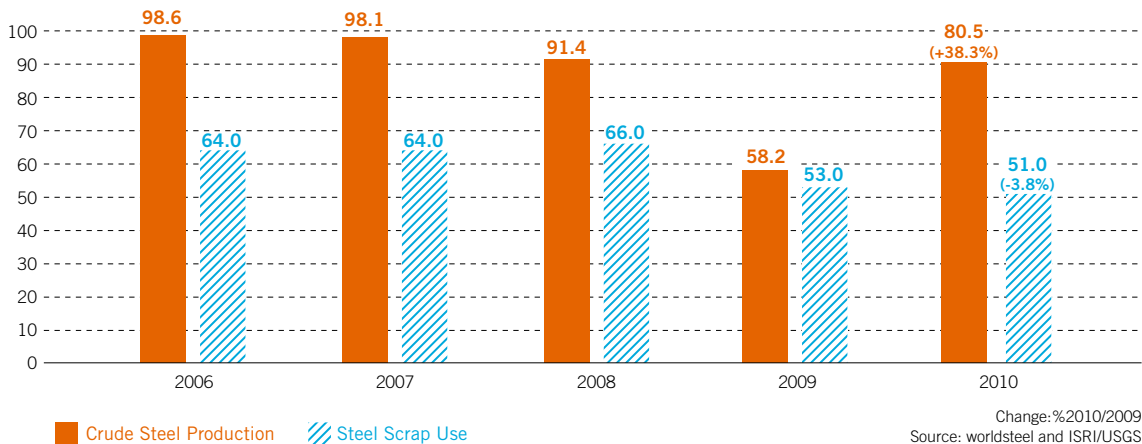
STEEL SCRAP FOR STEELMAKING IN CHINA (MILLION TONNES)



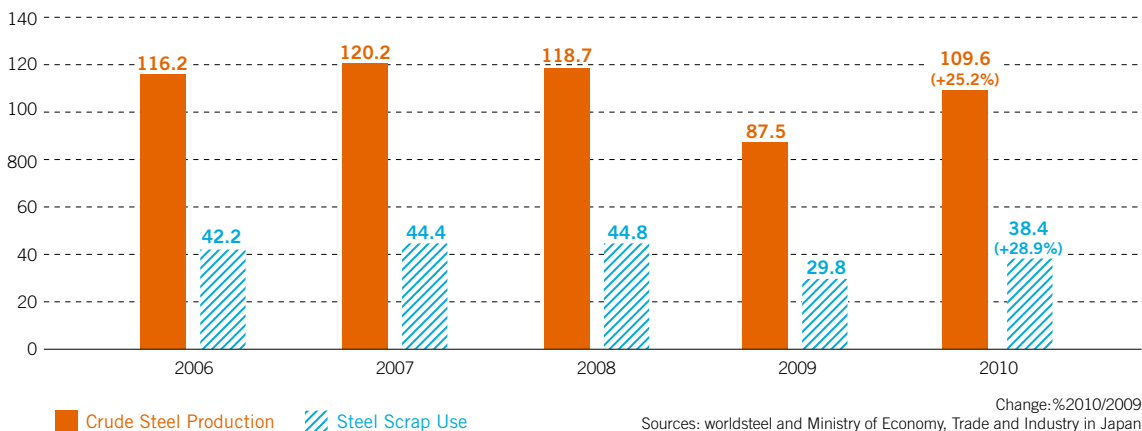
STEEL SCRAP FOR STEELMAKING IN THE EU (MILLION TONNES)



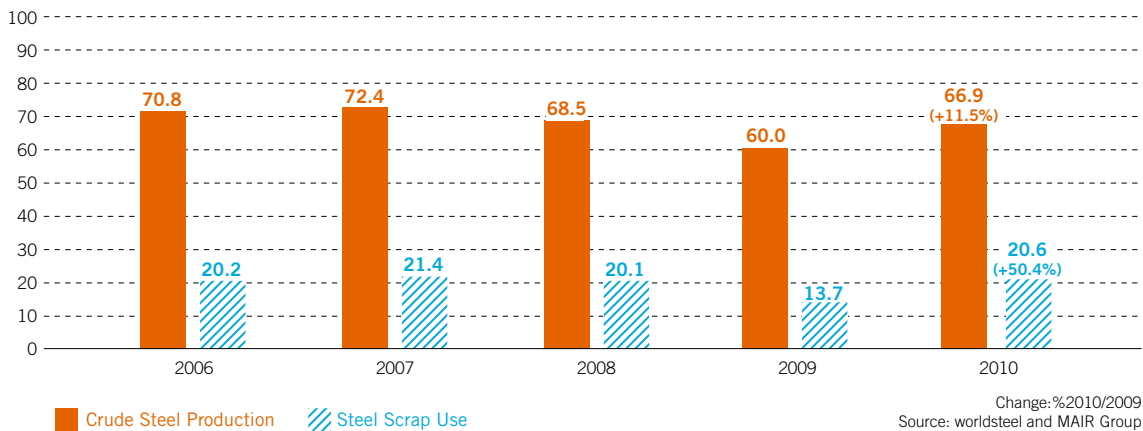
STEEL SCRAP FOR STEELMAKING IN THE USA (MILLION TONNES)



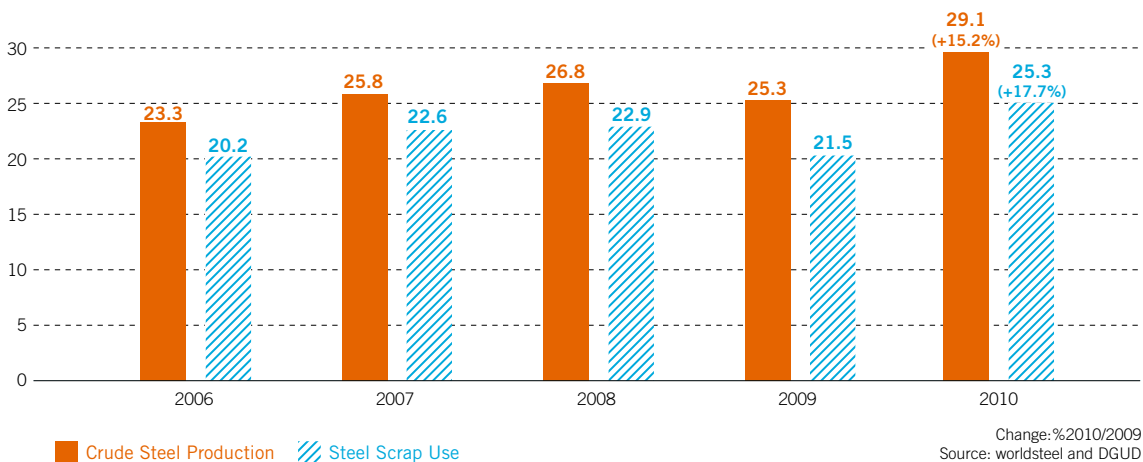
STEEL SCRAP FOR STEELMAKING IN JAPAN (MILLION TONNES)



STEEL SCRAP FOR STEELMAKING IN RUSSIA (MILLION TONNES)



STEEL SCRAP FOR STEELMAKING IN TURKEY (MILLION TONNES)



SCRAP USE IN IRON AND STEEL FOUNDRIES IN THE WORLD (MILLION TONNES)

| | 2006 | 2007 | 2008 | 2009 | % 2009/ 2008 |
|---|-------------|-------------|-------------|-------------|-----------------|
| Iron Steel and Malleable Casting Production | 75.3 | 79.1 | 78.8 | 67.6 | -14.2 |
| Total Scrap Use | 73.7 | 75.8 | 73.6 | 56.9 | -22.7 |
| (Share Scrap Use/ Crude Steel) in % | 97.9 | 95.8 | 93.4 | 84.2 | |
| of which: | | | | | |
| Own Arisings (Circulating Scrap)* | 28.1 | 28.9 | 28.1 | 21.7 | -22.8 |
| (Share Own Arisings of Scrap Use) in % | 38.1 | 38.1 | 38.1 | 38.1 | |
| Scrap Purchases by Foundries | 45.6 | 46.8 | 45.5 | 35.2 | -22.6 |
| (Share Purchases of Scrap Use) in % | 61.8 | 61.8 | 61.8 | 61.8 | |

Sources: Modern Casting and own calculations by BDG/BIR

* Own Arisings (Circulating Scrap) is the term for lumpy metal remains evolving during the casting process. Elements belonging to this process such as sprues, runners, ingates and feeders are essential to produce a raw casting, but they do not belong to the actual casting and are therefore eliminated during the finishing process of it. Rejects and scrap developing in the foundry are added to the Circulating Scrap as well.

MAIN STEEL SCRAP IMPORTERS (MILLION TONNES)

| | 2006 | 2007 | 2008 | 2009 | 2010 | % 2010/ 2009 |
|-------------|--------|--------|--------|--------|--------|-----------------|
| Turkey | 15.100 | 17.141 | 17.415 | 15.665 | 19.194 | +22.5 |
| South Korea | 5.621 | 6.887 | 7.319 | 7.800 | 8.091 | +3.7 |
| China | 5.386 | 3.395 | 3.590 | 13.692 | 5.848 | -57.3 |
| India | 3.359 | 3.014 | 4.579 | 5.336 | 3.211* | -24.6 |
| Taiwan | 4.459 | 5.418 | 5.539 | 3.912 | 5.364 | +37.1 |
| EU | 7.294 | 5.142 | 4.809 | 3.270 | 3.629 | +9.7 |
| USA | 4.814 | 3.692 | 3.571 | 2.986 | 3.773 | +26.4 |
| Canada | 1.476 | 1.435 | 1.674 | 1.408 | 2.227 | +58.1 |
| Malaysia | 2.941 | 3.688 | 2.293 | 1.683 | 2.292 | +36.2 |
| Indonesia | 1.063 | 1.260 | 1.899 | 1.484 | 1.642 | +10.6 |
| Thailand | 1.373 | 1.805 | 3.142 | 1.323 | 1.282 | -3.1 |

Sources: Official Trade Statistics/WV Stahl, DCUD

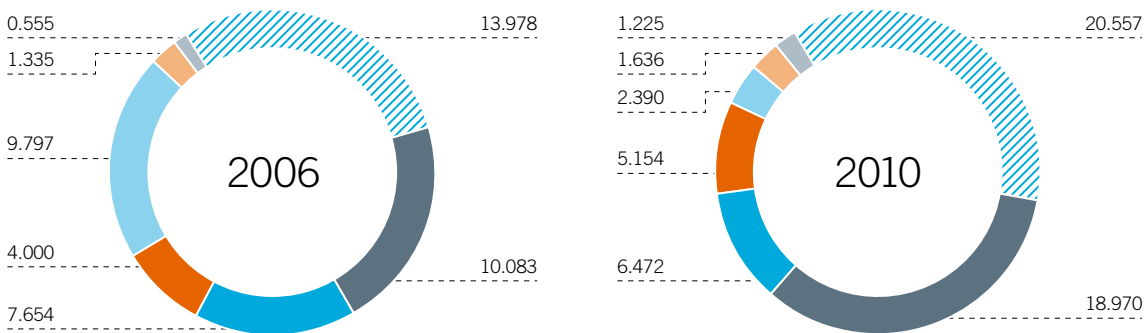
* Jan-Sep 2010

MAIN STEEL SCRAP EXPORTERS (MILLION TONNES)

| | 2006 | 2007 | 2008 | 2009 | 2010 | % 2010/ 2009 |
|--------------|--------|--------|--------|--------|--------|-----------------|
| USA | 13.978 | 16.642 | 21.712 | 22.439 | 20.557 | -8.4 |
| EU | 10.083 | 10.566 | 12.799 | 15.779 | 18.970 | +20.2 |
| Japan | 7.654 | 6.449 | 5.344 | 9.398 | 6.472 | -31.1 |
| Canada | 4.000 | 4.100 | 4.084 | 4.792 | 5.154 | +7.6 |
| Russia | 9.797 | 7.855 | 5.128 | 1.202 | 2.390 | +98.9 |
| Australia | 1.335 | 1.501 | 1.708 | 1.925 | 1.636 | -15.0 |
| South Africa | 0.555 | 0.752 | 1.271 | 1.144 | 1.225 | +7.0 |

Sources: Official Trade Statistics/WV Stahl

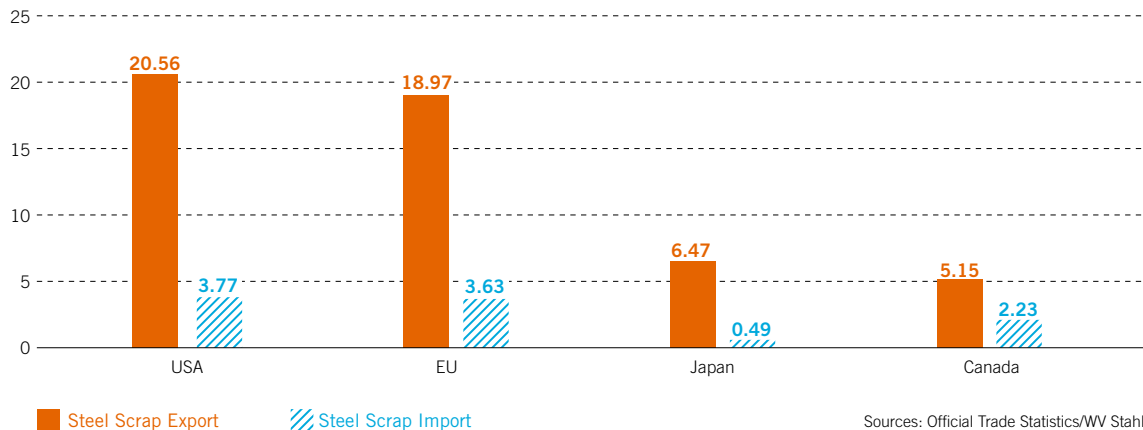
MAIN STEEL SCRAP EXPORTERS – DEVELOPMENT 2006 VS. 2010 (MILLION TONNES)



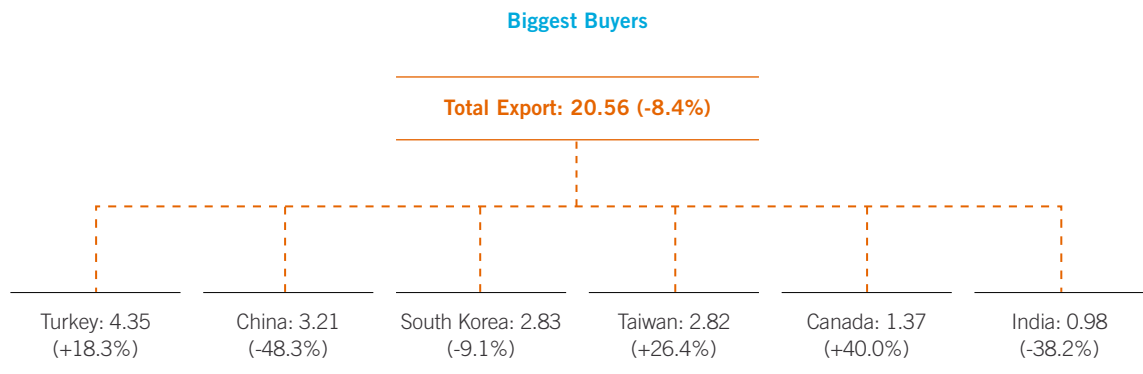
USA EU Japan Canada Russia Australia South Africa

Sources: Official Trade Statistics/WV Stahl

MAJOR NET STEEL SCRAP EXPORTERS 2010 (MILLION TONNES)

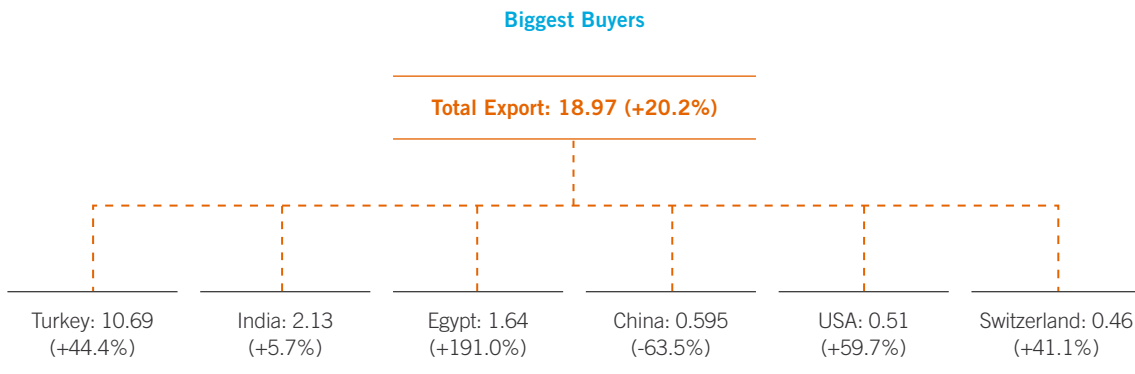


US STEEL SCRAP EXPORT 2010 (MILLION TONNES)



Change: % 2010/2009
Source: Official Trade Statistics/WV Stahl

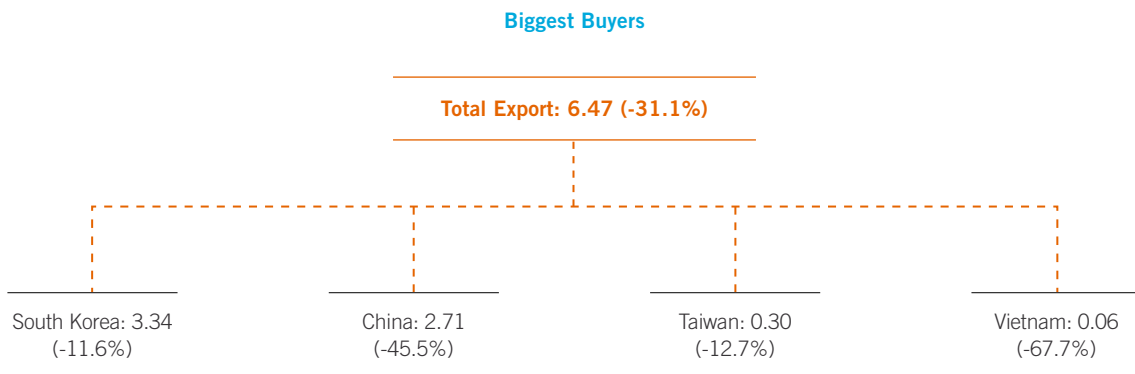
EU STEEL SCRAP EXPORT 2010 (MILLION TONNES)



Change: % 2010/2009

Source: Official Trade Statistics/WV Stahl

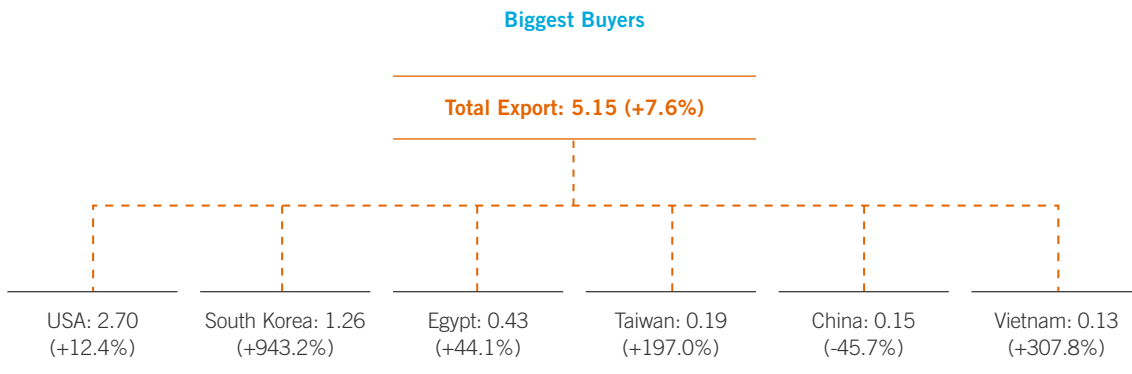
JAPAN STEEL SCRAP EXPORT 2010 (MILLION TONNES)



Change: % 2010/2009

Source: Official Trade Statistics/WV Stahl

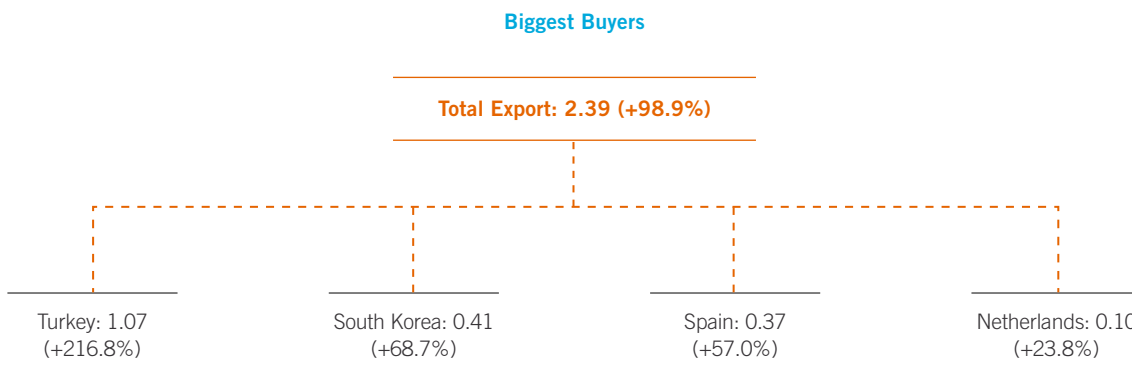
CANADA STEEL SCRAP EXPORT 2010 (MILLION TONNES)



Change:% 2010/2009

Source: Official Trade Statistics/WV Stahl

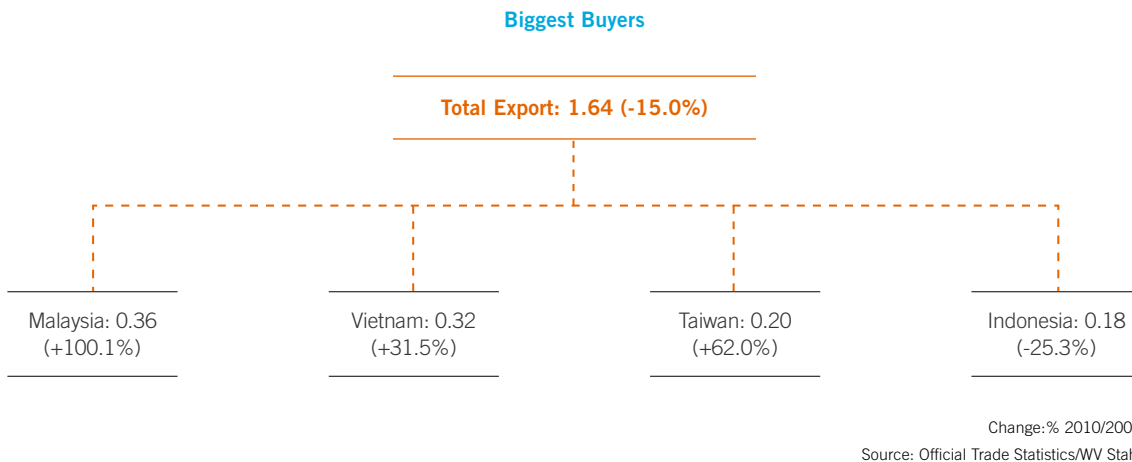
RUSSIA STEEL SCRAP EXPORT 2010 (MILLION TONNES)



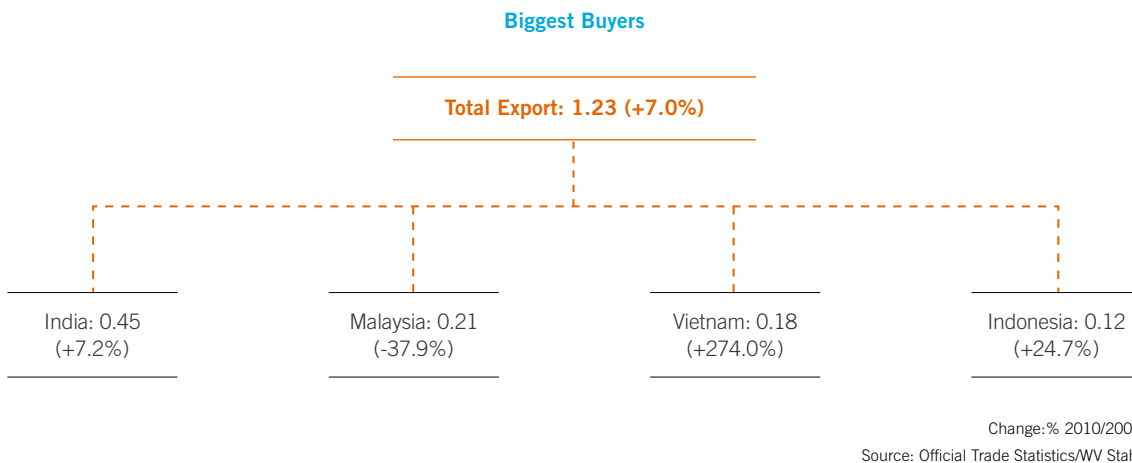
Change:% 2010/2009

Source: Official Trade Statistics/WV Stahl

AUSTRALIA STEEL SCRAP EXPORT 2010 (MILLION TONNES)

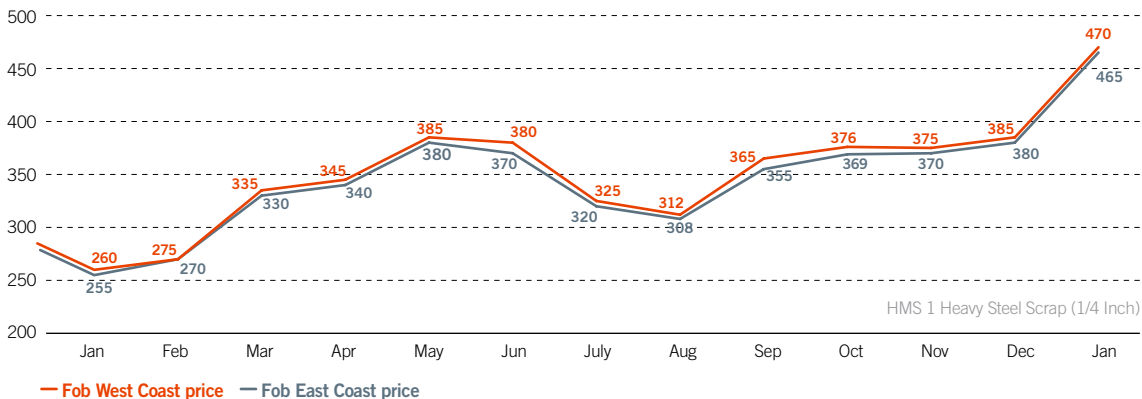


SOUTH AFRICA STEEL SCRAP EXPORT 2010 (MILLION TONNES)

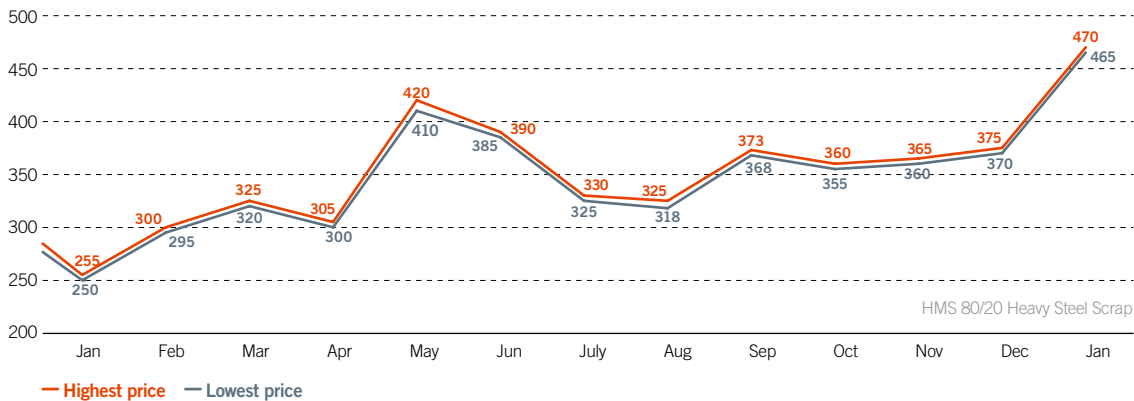


PRICE CURVE JANUARY 2010/2011

USA Export Prices (US\$/GRT)



Fob Rotterdam Export Prices (US\$/t)



Source: Recycling International

GLOSSARY

| | |
|----------------------------------|--|
| BIR | Bureau of International Recycling, Brussels, Belgium |
| BDG | German Foundry Association, Düsseldorf, Germany |
| CAMU | China's Association of Metalscrap Utilization, Beijing, China |
| DCUD | Turkish Iron and Steel Producers Association, Ankara, Turkey |
| EUROFER | European Confederation of Iron and Steel Industries, Brussels, Belgium |
| ISRI | Institute of Scrap Recycling Industries, Washington, USA |
| ISSB | Iron and Steel Statistics Bureau, London, United Kingdom |
| MIDREX | Midrex Technologies Inc., Charlotte, USA |
| Modern Casting | Magazine for Foundries and Diecasters, Schaumburg, Illinois, USA |
| Official Trade Statistics | Prepared by WV Stahl, Düsseldorf, Germany |
| Recycling International | International trade magazine, Arnhem, The Netherlands |
| USGS | U.S. Geological Survey, Reston, USA |
| worldsteel | World Steel Association, Brussels, Belgium |
| WV Stahl | German Steel Federation, Düsseldorf, Germany |



Bureau of
International Recycling
Ferrous Division

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