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IRON AND STEEL [ADVANCE RELEASE]

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Iron and Steel

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The global recession of 2008–09 caused a retraction of global steel industries through 2009, followed by a weak and uneven recovery throughout 2010. U.S. capacity utilization for raw steel production, which had dipped to a low of 41% in April 2009, rose steadily to a high of 75% in June 2010, but declined slightly to 73% at yearend. U.S. apparent steel consumption, which had decreased to a low of 63 million metric tons (Mt) in 2009, after a high of 120 Mt in 2006 and 102 Mt in 2008, rebounded to 80 Mt in 2010. Apparent consumption in China, the world's largest producer and consumer of steel, was expected to increase by less than 7% in 2010 after a strong increase of 25% in 2009. The U.S. automotive sector led the steel-consuming markets during the weak economic recovery. Prices per metric ton for hot-roll sheet steel reached a high of $822 in early 2010 after a low of $382 in mid-2009, but then decreased to $559 by yearend 2010. Recent unprecedented rises of iron ore and metallurgical coal prices, along with the replacement of annual contracts by a 3-month spot price for iron ore, adversely affected steelmaking companies and their customers.

According to the World Steel Association (WSA) (2011a), China was the top steel producer in the world during 2010 (627 Mt), with its leading steelmaker, Baosteel Group Corp. (37 Mt), placing second behind the world's leading steelmaker ArcelorMittal (98.2 Mt). India became the world's fourth-leading steel producer (68.3 Mt), behind the United States (80.5 Mt), and ahead of the fifth-leading producer Russia (66.9 Mt). Japan ranked first in the world for total exports of steel, followed by the European Union (EU). China ranked first in the world for total imports of steel followed by the EU and then the Republic of Korea.

The American Iron and Steel Institute (AISI) reported U.S. production of iron and steel and shipments of steel mill products. These data can be regarded as representing 100% of the raw steel producers in the United States. World production of iron and steel was reported by the WSA and by foreign government agencies. Consistent with international usage and Federal Government policy, the U.S. Geological Survey reported all data on iron and steel in metric units unless otherwise noted.

Environmental Issues

The American Power Act (APA), a so-called "cap and trade" bill, introduced in the U.S. Senate, was very similar to a bill that was passed earlier in the U.S. House of Representatives (Power and Talley, 2010). Under a cap-and-trade system, the Federal Government would require companies to hold permits in order to emit greenhouse gases. Companies would be allowed to trade permits among themselves. AISI and the National Association of Manufacturers voiced concerns that the bill's provisions related to manufacturing and energy do not go far enough to ensure the continued competitiveness in the global marketplace (American Iron and Steel Institute, 2010). While the Senate deliberated, the U.S. Environmental Protection Agency (EPA) regulated greenhouse gas emissions under the Clean Air Act, issuing the Tailoring Rule on May 13, 2010. The AISI and Massey Energy Co., among others, took legal steps to oppose the EPA regulatory actions. A number of State regulators and other associations also opposed new Federal rules curbing industrial greenhouse-gas emissions (Hill, The, 2009).

The U.S. steel industry has reduced its energy consumption per ton of steel shipped by 30% since 1990 (American Iron and Steel Institute, 2010). During the same period, greenhouse gas emissions were reduced by 35%. The U.S. steel industry had the lowest average carbon dioxide emissions per ton of steel produced in the global steel industry (American Iron and Steel Institute, 2010). Also, the American steel sector is recognized as having the steepest decline in total air emissions among nine manufacturing sectors studied in the EPA's 2008 Sector Performance Report (U.S. Environmental Protection Agency, 2008. p. 5).

Production

Raw steel production in the United States was about 80.5 Mt in 2010, up about 36% from that in 2009 (table 1). The AISI estimated raw steel production capability to be 114 Mt, up slightly from that in 2009. Production represented 70.4% of estimated capacity, up from 52.4% in 2009.

Integrated steel producers smelted iron ores to make liquid iron in blast furnaces and used basic oxygen furnaces to refine the liquid iron with some steel scrap to produce raw liquid steel. The basic oxygen process was used to make 31.2 Mt of steel in the United States (American Iron and Steel Institute, 2011, p. 72). The use of this process increased to 38.7% of total steel production in 2010 from 38.2% in 2009. Blast furnace operations in the United States were operated by 5 companies at 15 locations in 2010 (Iron and Steel Technology, 2011a, p. 268).

Minimills and specialty mills are nonintegrated steel producers that use the electric arc furnace (EAF) to melt low-cost raw materials (usually scrap). They also employ continuous casting machines and hot-rolling mills that are often closely coupled to casting operations. Specialty mills include producers of alloy-electrical, stainless, and tool steel; high-temperature alloys; forged ingots; and other low-volume steel products. About 100 companies operated about 112 EAF facilities in the United States during 2010 (Iron and Steel Technology, 2011b, p. 126). These U.S. mills used the EAF steelmaking process to produce 49.3 Mt of steel, a 34% increase from that in 2009, and accounted for 61.3% of total steelmaking (American Iron and Steel Institute, 2011, p. 72–73).

Raw liquid steel is mostly cast into semifinished products in continuous casting machines. Only 2.6% of U.S. production was cast in ingot form in 2010, and subsequently rolled into semifinished forms, a slightly higher percentage than that of 2009. Continuous casting production was 78.4 Mt, or 97.4% of total steel production, 35.4% higher than in 2009 (American Iron and Steel Institute, 2011, p. 73).

Consumption

Steel mill products are produced at steel mills either by forging or rolling into forms normally delivered for fabrication or use. Some companies purchase semifinished steel mill products from other steel companies and use them to produce finished steel products. The accumulated shipments of all companies less the shipments to other reporting companies are identified as net shipments to avoid double counting.

U.S. apparent steel consumption, an indicator of economic growth, increased to 80 Mt in 2010 from 63 Mt in 2009. Net shipments of steel mill products by U.S. companies increased by 34% to 75.7 Mt compared with those of 2009 (American Iron and Steel Institute, 2011, p. 25). Compared with those in 2009, shipments of construction and contractors' products, the leading single end-use market for steel, increased by 21% in 2010; automotive product shipments increased by 32%; shipments of agricultural and industrial machinery, equipment, and tools increased by 43%; steel service center shipments increased by 48%; lumbering, mining, oil and gas, and quarrying industries shipments increased by 126%; and shipments of appliances and containers, packaging, and shipping material decreased by 15% (American Iron and Steel Institute, 2011, p. 29).

Prices

The U.S. Department of Labor, Bureau of Labor Statistics (2011), producer price index for steel mill products increased by 16% to 191.7 in 2010 from 165.2 in 2009 (1982 base=100) (table 1). The average price of hot-rolled steel sheet increased steadily from $541 per short ton in January to a high of $684 per short ton in April, before decreasing to a low of $539 in November and then increasing to $670 per short ton in December (Purchasing Magazine, 2010).

Foreign Trade

Export shipments of steel mill products by AISI reporting companies increased to 11.0 Mt from 8.42 Mt in 2009 (table 1). Canada received the largest amount of U.S. exported steel, 6.1 Mt, 43% more than that in 2009 (table 4). Mexico was again the second leading importer, receiving 2.4 Mt, 30% more than that in 2009. Domestic imports of steel mill products increased by 48% to 21.7 Mt from 14.7 Mt in 2009. Canada, China, the EU, Japan, the Republic of Korea, and Mexico, were major sources of steel mill product imports in 2010 (table 4).

Imports of semifinished steel (table 6) by steel companies are taken into consideration in evaluating apparent consumption (supply) of steel mill products in the United States and the share of the market represented by imported steel. To avoid double counting the imported semifinished steel and the products produced from it, the amount of semifinished steel consumed by companies that also produced raw steel is subtracted from domestic consumption. Between 1993 and 2006, semifinished steel imports ranged between 2.5 million metric tons per year (Mt/yr) and 8.5 Mt/yr. Prior to 1993, the amount was less than 0.2 Mt/yr. Taking the imported semifinished steel into consideration, the share of the U.S. steel market represented by imported steel was an estimated 26% in 2010 compared with 25% in 2009.

U.S. imports recovered from 2009 lows and the steel industry, among others, continued to seek protection from low-priced Chinese competition that was blamed for lost sales and jobs. U.S. companies and the U.S. Government filed import injury cases against China with the World Trade Organization and the U.S. International Trade Commission (USITC), accusing Chinese competitors of receiving government subsidies, thus allowing the sale of products in the United States at artificial and unfairly low prices. Also, Chinese consumption has not kept up with industrial overcapacity, thus resulting in excessive exporting to the United States of low-priced products. A 35% tariff on Chinese-made tires in 2009 was followed in late 2009 by several USITC rulings in favor of domestic steelmakers, including duties of 10% to 16% against Chinese exporters of steel pipe used mostly for the oil and gas industries, duties of 2% to 438% applied to imports of steel wire decking, and duties of 45% to 289% on Chinese steel imports (Palmer, 2010a, b, c).

"Fabricated steel products" reported in tables 4, 5, and 6 are those products produced from steel mill products but do not include products that incorporate steel products with other materials. Examples of fabricated steel products are structural steel and steel fasteners. "Other iron and steel products" refers to products that are not produced from steel mill products. Examples of other iron and steel products include iron or steel castings and direct reduced iron (DRI).

World Review

World production of pig iron totaled about 1.03 billion metric tons (Gt), about 12% more than that in 2009 (table 9). Pig iron production of the EU was about 95 Mt, 24% more than that in 2009. Germany was the leading producer in the EU, producing about 29 Mt, 42% more than that in 2009. China continued to be the leading producer of pig iron in the world, producing more than 590 Mt, 7% more than that of 2009, followed by Japan (82 Mt), Russia (49 Mt), India (39 Mt), the Republic of Korea (31 Mt), Germany (29 Mt), Ukraine (28 Mt), the United States (27 Mt), and Brazil (25 Mt). Russia and Ukraine were the only major pig iron producers in the Commonwealth of Independent States (CIS). In North America, the only major producer of pig iron was the United States, where in 2010 production increased by 41% from that in 2009. In South America, the only major pig iron producer was Brazil.

World capacity for DRI production in 2010 was estimated to be about 82 Mt/yr (Midrex Technologies, Inc., 2011). DRI production worldwide reached a record of 68.7 Mt in 2010, 4.6% more than that in 2009 (table 9). The leading producer of DRI was India, followed by, in descending order of tonnage, Iran, Venezuela, and Mexico. In 2010, additional DRI capacity of almost 20 Mt/yr was under construction in China, Egypt, India, Iran, Oman, Pakistan, the United Arab Emirates, and

Venezuela. The leading technology was the Midrex process, followed by the HYL I and the HYL III processes.

World production of raw steel was 1.41 Gt, 15% more than the revised production in 2009 (table 10). Steel production increased during 2010 in North America (33%), the EU and South America (20% each), and the CIS (12%). Positive growth also took place in India (18%) and China (10%). China produced 44% of world total crude steel in 2010. As in previous years, production varied widely among major regions of the world. Asian countries produced about 56% of the world's steel; the EU, 14%; North America, 8%; and the CIS, 8%.

During 2010, China was again the world's leading steel producer, almost 627 Mt, a gain of 10% compared with that of 2009. In descending order of production, the leading producers behind China were Japan, the United States, India, Russia, the Republic of Korea, and Germany. These six countries accounted for 73% of world production. The combined steel production of the seven steel-producing countries in the CIS was about 108 Mt, an increase of 12% from that in 2009. Russia and Ukraine remained the leading producers in the CIS. U.S. steel production during 2010 was greater than 80 Mt, an increase of 36% from that in 2009.

SteelOrbis (2011) reported that world steel capacity utilization rate at yearend 2010 was about 74%, after a low of about 57% in December 2008 and a high of 83% in April 2010. China, the leading steel-consuming and steel-producing country in the world, had a capacity utilization rate of 89% in 2010, compared with 83% in 2008 (Ernst & Young, 2010).

Outlook

The expansion or contraction of gross domestic product (GDP), the broadest measure of a nation's economic activity, may be considered a predictor of the health of the steelmaking and steel manufacturing industries, worldwide and domestically. The World Bank's forecast of global GDP growth for 2010, 2011, 2012, and 2013 was 3.8%, 3.2%, 3.6%, and 3.6%, respectively (World Bank, The, 2011). The International Monetary Fund's forecast of world GDP growth for 2010, 2011, and 2012 was 5.1%, 4.3%, and 4.5%, respectively (International Monetary Fund, 2011). The U.S. Federal Reserve's forecast for the U.S. 2011 GDP growth rate was between 3.4% and 3.9%, and between 3.5% and 4.4% for 2012 (Board of Governors of the Federal Reserve System, 2011). The 2010 GDP growth for China was 10.3% and was projected to be 9.3% and 8.7% in 2011 and 2012, respectively, and that of India was 8.8%, 8.0%, and 8.4% for those years, respectively (World Bank, The, 2011).

MEPS (International) Ltd. forecast total world steel production in 2011 to be 1.568 Gt, up 11% from that in 2010, and 1.625 Gt for 2014 [MEPS (International) Ltd., 2011]. MEPS also forecast increasing steel production in 2011 in South America, the Middle East, China, the CIS, and the EU of 17%, 11%, 8%, 5%, and 4%, respectively. For China, MEPS forecast a 19% increase in steel production by 2014 compared with that in 2010.

The progression of the U.S. financial downturn into a global economic downturn brought about a global decline of steel demand in late 2008 and through 2010. Improvement in 2011 will depend on the effects of Government stimulation packages, stabilization of financial systems, and a return of consumer confidence.

World apparent steel consumption (ASC) was expected to increase by 6% to 1.359 Gt during 2011, after increasing by 13% in 2010, and then increase by 6% in 2012, to reach a historic high of 1.44 Gt (World Steel Association, 2011b). China's ASC was expected to increase by 5% to 605 Mt in 2011, and then by 5% in 2012 to 635 Mt. ASC in India was expected to increase by 13% in 2011 to about 69 Mt and 14% in 2012. The U.S. ASC was expected to increase by 13% to 90 Mt in 2011. The EU's ASC was expected to increase by 5% to 152 Mt in 2011 and increase by 4% in 2012. In Japan, the 2011 ASC was expected to decrease by 1.2% to 63 Mt, and remain at this level during 2012. The ASC of the CIS was expected to increase by nearly 8% to 52 Mt in 2011 and then by 9% in 2012.

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TABLE 1

SALIENT IRON AND STEEL STATISTICS[1]

(Thousand metric tons unless otherwise noted)

	2006	2007	2008	2009	2010
United States:					
Pig iron:					
Production[2]	37,900	36,300	33,700	19,000	26,800
Exports[3]	813	71	51	10 r	2,220
Imports for consumption[3]	6,730	5,220	4,980	2,420	3,780
Direct-reduced iron:					
Production[4]	240	250	260	--	--
Exports[3]	(5)	(5)	(5)	(5)	(5)
Imports for consumption[3]	2,610	2,330	2,340	1,020	1,640
Raw steel production:[6]					
Carbon steel	89,500	89,800	84,100	55,200 r	73,600
Stainless steel	2,460	2,170	1,930	1,620	2,200
All other alloy steel	6,190	6,140	5,810	2,620	4,680
Total	98,200	98,100	91,900 r	59,400	80,500
Capability utilization, percent	87.5	87.0	81.4	52.4 r	70.4
Steel mill products:					
Net shipments[2]	99,300	96,500	89,400	56,400	75,700
Exports[2]	8,830	10,100	12,200	8,420	11,000
Imports[2]	41,100	30,200	29,000	14,700	21,700
Producer price index (1982=100.0)[7]	174.1	182.9	220.6	165.2	191.7
World production:[8]					
Pig iron	881,000	956,000 r	931,000	920,000 r	1,030,000
Direct-reduced iron[4]	58,700 r	64,100 r	66,700 r	65,700 r	68,700
Raw steel	1,250,000	1,350,000	1,330,000	1,240,000	1,420,000

rRevised. -- Zero.

[1]Data are rounded to no more than three significant digits, except producers price index; may not add to totals shown.

[2]Data are from the American Iron and Steel Institute (AISI).

[3]Data are from the U.S. Census Bureau.

[4]Data are from Midrex Technologies, Inc., government, and companies.

[5]Less than ½ unit.

[6]Raw steel is defined by AISI as steel in the first solid state after melting, suitable for rolling.

[7]Data are from the U.S. Department of Labor, Bureau of Labor Statistics.

[8]Data are from the U.S. Geological Survey and the World Steel Association.

TABLE 2
MATERIALS CONSUMED IN BLAST FURNACES AND
PIG IRON PRODUCED[1]

(Thousand metric tons)

Material	2009	2010
Iron oxides:[2]		
Ores	--	--
Pellets	26,200	36,000
Sinter[3]	3,720	5,090
Total	29,900	41,100
Scrap[4]	1,460	1,090
Coke[2]	7,650	8,430
Pig iron, produced	19,000	26,800

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]American Iron and Steel Institute.

[3]Includes sintered ore and pellet fines, dust, mill scale, and other revert iron-bearing materials; also some nodules.

[4]Mainly briquetted turnings and borings, shredded scrap, etc.; scrap produced at blast furnaces and remelt not included.

TABLE 3
DISTRIBUTION OF SHIPMENTS OF STEEL MILL PRODUCTS, BY STEEL TYPE, PRODUCT, AND MARKET[1]

	Quantity (thousand metric tons)		Percentage	
	2009	2010	2009	2010
Shipments by steel type:				
Carbon steel	53,100 r	71,000	94.08 r	93.76
Alloy steel	2,140	3,210	3.79	4.25
Stainless steel	1,200	1,510	2.13	1.99
Total	56,400	75,700	100.00	100.00
Steel mill products:				
Ingots, blooms, billets and slabs	801	927	1.42	1.22
Wire rods	1,490	1,710	2.65 r	2.25
Structural shapes, heavy	3,380	3,880	6.00 r	5.13
Steel piling	382	819	0.68	1.08
Plates, cut lengths	4,100	5,660	7.28 r	7.47
Plates, in coils	2,120 r	3,030	3.75 r	4.01
Rails	712	713	1.26	0.94
Railroad accessories	190	190	0.34	0.25
Bars, hot-rolled	3,100	4,080	5.50	5.39
Bars, light-shaped	1,090	1,760	1.93	2.33
Bars, reinforcing	4,620 r	5,740	8.18 r	7.58
Bars, cold finished	827	1,180	1.47	1.55
Tool steel	7	8	0.01	0.01
Pipe and tubing, standard pipe	535	626	0.95	0.83
Pipe and tubing, oil country goods	945	1,960	1.68	2.59
Pipe and tubing, line pipe	169	302	0.30	0.40
Pipe and tubing, mechanical tubing	387	521	0.69	0.69
Pipe and tubing, pressure tubing	22	39	0.04	0.05
Pipe and tubing, stainless	9	10	0.02	0.01
Pipe and tubing, structural	62	61	0.11	0.08
Wire	288	272	0.51	0.36
Tin mill products, blackplate	62	100	0.11	0.13
Tin mill products, tinplate	1,580	1,840	2.81 r	2.44
Tin mill products, tin-free steel	453	474	0.80	0.63
Tin mill products, tin coated sheets	66	84	0.12	0.11
Sheets, hot-rolled	12,200 r	16,600	21.55 r	21.88
Sheets, cold-rolled	6,780	9,070	12.02	11.98
Sheets and strip, hot dip galvanized	7,350	10,700	13.04 r	14.10
Sheets and strip, electrogalvanized	1,020	1,510	1.81	2.00
Sheets and strip, other metallic coated	654	965	1.16	1.27
Sheets and strip, electrical	326	306	0.58	0.40
Strip, hot rolled	28	37	0.05	0.05
Strip, cold rolled	693	584	1.23	0.77
Total	56,400	75,700	100.00	100.00
Shipments by markets:				
Service centers and distributors	13,800	20,400	24.43 r	26.96
Construction	13,500	16,300	23.87 r	21.53
Automotive	7,300	9,620	12.94	12.71
Machinery	542 r	795	0.96 r	1.05
Containers	2,040	2,390	3.61 r	3.15
All others	19,300 r	26,200	34.20 r	34.60
Total	56,400	75,700	100.00	100.00

rRevised.

[1]Data are rounded to no more than three significant digits, except percentages; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 4
U.S. IMPORTS AND EXPORTS OF STEEL MILL PRODUCTS,
BY COUNTRY[1]

(Thousand metric tons)

	2009		2010	
Country	Imports	Exports	Imports	Exports
Argentina	75	74	128	15
Australia	258	15	--	28
Brazil	654	135	903	143
Canada	3,880	4,270	6,030	6,100
China	1,330	194	781	116
European Union[2]	1,760	278	2,570	342
Germany	450	43	1,090	73
Japan	1,110	13	1,350	16
Korea, Republic of	1,200	55	1,850	72
Mexico	1,590	1,840	2,560	2,390
Russia	492	--	1,250	--
South Africa	30	9	117	2
Sweden	150	61	253	14
Taiwan	336	92	486	88
Turkey	446	--	528	--
Ukraine	46	--	118	--
Venezuela	69	66	--	62
Other	840 r	1,280	1,710	1,540
Total	14,700	8,420	21,700	11,000

[r]Revised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Excludes Germany and Sweden.

Source: American Iron and Steel Institute.

TABLE 5

U.S. EXPORTS OF IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2009	2010
Steel mill products:		
Ingots, blooms, billets, slabs	589	609
Wire rods	144	170
Structural shapes, heavy	516	760
Steel piling	30	31
Plates, cut lengths	814	1,070
Plates, in coils	704	979
Rails, standard	88	84
Rails, other	29	23
Railroad accessories	14	27
Bars, hot-rolled	390	563
Bars, light-shaped	92	235
Bars, concrete reinforcing	390	520
Bars, cold-finished	109	147
Tool steel	13	29
Pipe and tubing, standard pipe	74	95
Pipe and tubing, oil country goods	273	366
Pipe and tubing, line pipe	198	186
Pipe and tubing, mechanical tubing	37	38
Pipe and tubing, stainless	29	33
Pipe and tubing, nonclassified	309	370
Pipe and tubing, structural	181	221
Pipe for piling	25	20
Wire	143	193
Tin mill products, blackplate	3	3
Tin mill products, tinplate	220	208
Tin mill products, tin-free steel	13	21
Sheets, hot-rolled	717	876
Sheets, cold-rolled	582	832
Sheets and strip, hot-dip galvanized	726	960
Sheets and strip, electrogalvanized	290	393
Sheets and strip, other metallic coated	174	240
Sheets and strip, electrical	205	213
Strip, hot-rolled	157	194
Strip, cold-rolled	144	298
Total	8,420	11,000
Fabricated steel products:		
Structural shapes, fabricated	319	384
Rails, used	34	16
Railroad products	41	64
Wire rope	18	19
Wire, stranded products	31	30
Wire, other products	85	122
Springs	100	142
Nails and staples	27	30
Fasteners	678	911
Chains and parts	28	37
Grinding balls	83	114
Pipe and tube fittings	27	38
Other[2]	84	104
Total	1,560	2,010
Grand total	9,980 r	13,000

See footnotes at end of table.

TABLE 5—Continued
U.S. EXPORTS OF IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2009	2010
Cast iron and steel products:		
Cast steel pipe fittings	27	38
Cast iron pipe and fittings	101	115
Cast steel rolls	2	1
Cast grinding balls	27	34
Granules, shot and grit	26	31
Other castings	55	68
Total	238	287

[r]Revised.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes shapes cold formed, sashes and frames, fence and sign post, architectural and ornamental work, and conduit.

Source: American Iron and Steel Institute.

TABLE 6

U.S. IMPORTS OF MAJOR IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2009	2010
Steel mill products:		
Ingots, blooms, billets, and slabs	1,850	4,600
Wire rods	692	1,200
Structural shapes-heavy	337	474
Steel piling	49	77
Plates, cut lengths	481	680
Plates, in coils	645	928
Rails and railroad accessories	259	260
Bars, hot-rolled	612	952
Bars, light-shaped	78	99
Bars, reinforcing	380	469
Bars, cold-finished	169	243
Tool steel	52	122
Pipe and tubing, standard pipe	538	705
Pipe and tubing, oil country goods	1,450	2,160
Pipe and tubing, line pipe	1,450	1,350
Pipe and tubing, mechanical tubing	302	386
Pipe and tubing, pressure tubing	57	78
Pipe and tubing, stainless	81	100
Pipe and tubing, nonclassified	13	22
Pipe and tubing, structural	231	282
Pipe for piling	14	14
Wire	441	573
Tin mill products-blackplate	38	31
Tin mill products-tinplate	293	459
Tin mill products-tin-free steel	78	134
Sheets, hot-rolled	1,580	2,180
Sheets, cold-rolled	1,030	1,110
Sheets and strip, hot-dip galvanized	937	1,290
Sheets and strip, electrogalvanized	85	91
Sheets and strip, other metallic coated	270	375
Sheets and strip, electrical	60	86
Strip, hot-rolled	41	40
Strip, cold-rolled	112	144
Total	14,700	21,700
Fabricated steel products:		
Structural shapes, fabricated	965	772
Rails, used	57	53
Railroad products	97	125
Wire rope	113	140
Wire-stranded products	158	202
Springs	214	280
Nails and staples	388	492
Fasteners	779	957
Chains and parts	98	116
Pipe and tube fittings	203	265
Other	456	709
Total	3,530	4,110
Grand total	18,200	25,800

See footnotes at end of table.

TABLE 6—Continued
U.S. IMPORTS OF MAJOR IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2009	2010
Cast iron and steel products:		
Cast steel pipe fittings	203	265
Cast iron pipe and fittings	35	25
Other products	226	315
Total	464	605

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 7
U.S. IMPORTS OF STAINLESS STEEL[1]

(Metric tons)

Product	2009	2010
Semifinished	70,200	101,000
Plate	46,800	88,600
Sheet and strip	200,000 [r]	353,000
Bars and shapes	76,200 [r]	110,000
Wire and wire rods	40,700	60,300
Pipe and tube	81,300	99,700
Total	515,000 [r]	813,000

[r]Revised.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 8
COAL AND COKE AT COKE PLANTS[1, 2]

(Thousand metric tons)

	2009	2010
Coal, consumption	13,900	19,100
Coke:[3]		
Production	10,100	13,600
Exports	1,190	1,330
Imports	315	1,100
Consumption, apparent	9,360	13,500

[1]Data are rounded to no more than three significant digits.

[2]Includes furnace and merchant coke plants.

[3]Coke production and consumption do not include breeze.

Source: Energy Information Administration, Quarterly Coal Report, DOE/EIA–0121(2010/04Q).

TABLE 9

PIG IRON AND DIRECT-REDUCED IRON: WORLD PRODUCTION, BY COUNTRY[1, 2, 3, 4]

(Thousand metric tons)

Country[5]	2006	2007	2008	2009	2010
Algeria	1,093	1,193	690 e	493 r	600
Argentina:					
Pig iron	2,481	2,593	1,847	807	1,570
Direct-reduced iron	1,947	1,810	2,581	2,042	2,000 e
Australia	6,276	6,351	6,409	4,370 r	6,000 e
Austria	5,547	5,808	5,815 r	4,353 r	5,621
Belgium	7,516	6,576	7,125	3,087	4,725
Bosnia and Herzegovina	60 e	60 e	243	482 r	621
Brazil:					
Pig iron	32,452	35,571	34,871 r	25,135 r	25,200 p
Direct-reduced iron[e]	376	362	302	305	305
Bulgaria	1,147	1,069	441	--	--
Burma:[e]					
Pig iron	2	2	2	2	2
Direct-reduced iron	40	40	40	40	40
Canada:					
Pig iron[e]	8,305 [6]	8,577 [6]	9,000	5,000	6,000
Direct-reduced iron	446	910	690 e	300 e	800
Chile	1,115	1,147	1,150 r	923 r	605 e
China[7]	412,450	476,520	470,670	552,830 r	590,220
Colombia	360	341	300	342 r	370
Czech Republic	5,191	5,289	4,737	3,483	3,987
Egypt:					
Pig iron	1,100	1,000	1,000	3,900 r	3,600
Direct-reduced iron[e]	3,100	2,786 [6]	2,600 r	3,100 r	3,000
Finland	3,056 r	2,914	2,943 r	2,042 r	2,100
France	13,013	12,426	11,372	8,105	10,137
Germany:					
Pig iron	30,360	31,149	29,111	20,104 r	28,560
Direct-reduced iron[e]	580	590	520	380	450
Hungary	1,335	1,394	1,289	1,050	1,326
India:					
Pig iron	28,300	28,800	29,000 e	34,000 r	38,685
Direct-reduced iron	14,740	18,100	20,200 e	21,000	20,650
Indonesia, direct-reduced iron[e]	1,290 [6]	1,420	1,290	1,300	1,350
Iran:[e]					
Pig iron	2,041 [6]	2,572 r, 6	2,200	2,300 r	2,300
Direct-reduced iron	6,850	7,440	7,500 r	8,000	9,000
Italy	11,497	11,110	10,373	5,719	8,549
Japan	84,270	86,771	86,171	66,943 r	82,283
Kazakhstan	3,369 r	3,795 r	3,106 r	2,997 r	2,984
Korea, North[e]	900	900	900	900	900
Korea, Republic of	27,559	29,437	31,043	27,405 r	31,228
Libya, direct-reduced iron	1,633	1,660	1,569	1,097	1,300
Malaysia, direct-reduced iron	1,277	1,840	1,957	2,388 r	2,400 e
Mexico:					
Pig iron	3,800	4,077	4,670	3,929	4,720
Direct-reduced iron	6,167	6,265	5,940	4,203	5,455
Morocco[e]	15	15	15	15	15

See footnotes at end of table.

TABLE 9—Continued

PIG IRON AND DIRECT-REDUCED IRON: WORLD PRODUCTION, BY COUNTRY[1, 2, 3, 4]

(Thousand metric tons)

Country[5]	2006	2007	2008	2009	2010
Netherlands[8]	5,417	6,412	6,130	4,655	5,799
New Zealand[e]	664	679	622	608	667
Nigeria	150	200	--	-- [e]	--
Norway[e]	100	100	100	100	100
Pakistan[e]	1,200	1,000	1,000	1,000	1,000
Paraguay	136	148	145	146	146 [e]
Peru:[e]					
Pig iron	306	351 [6]	395 [6]	400	400
Direct-reduced iron	84	90	72	75	75
Poland	5,333	5,804	4,934	2,984 [r]	3,625
Portugal[e]	100	100	100	100	100
Qatar, direct-reduced iron	880	1,200	1,700 [e]	2,100	2,200
Romania	3,946	3,923	2,945	1,575 [r]	1,880
Russia:					
Pig iron	51,683	51,523	48,300	43,930	48,600 [e]
Direct-reduced iron	3,280 [r]	3,410 [r]	4,560 [r]	4,670 [r]	4,700 [e]
Saudi Arabia, direct-reduced iron	3,580	4,340	4,970	5,000 [e]	5,000 [e]
Serbia	1,529	1,485	1,582	1,006	1,265
Slovakia	4,145	4,012	3,529	3,019	3,649
South Africa:					
Pig iron	6,159	5,358	5,350	4,376	8,220
Direct-reduced iron	1,754	1,736	1,190	1,340 [r]	1,845
Spain	3,432	3,974	3,995	4,000 [e]	4,000 [e]
Sweden	3,577	3,815	3,800 [e]	3,700	3,800 [e]
Taiwan	10,500	10,550	9,750	7,939	9,358
Trinidad and Tobago, direct-reduced iron	2,072	2,065	1,600	1,182	1,000 [e]
Turkey[e]	5,952 [6]	6,234 [6]	6,600	7,000	8,000
Ukraine	32,926	35,647	30,982	25,676	28,375
United Kingdom	10,736	10,960	10,137	7,674	7,235
United States:					
Pig iron	37,900	36,300	33,700	19,000	26,800
Direct-reduced iron	240	250	260	--	--
Venezuela, direct-reduced iron	8,400	7,782	7,140	7,150	7,150 [e]
Zimbabwe[e]	38	--	--	--	--
Grand total	939,000	1,020,000	997,000	985,000 [r]	1,090,000
Of which:					
Pig iron[9]	881,000	956,000 [r]	931,000	920,000 [r]	1,030,000
Direct-reduced iron[10]	58,700 [r]	64,100 [r]	66,700 [r]	65,700 [r]	68,700

[e]Estimated. [p]Preliminary. [r]Revised. -- Zero.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Production is pig iron unless otherwise specified.

[3]Direct-reduced iron is obtained from ore by reduction of oxides to metal without melting.

[4]Table excludes ferroalloy production except where otherwise noted. Table includes data available through September 8, 2011.

[5]In addition to the countries listed, Vietnam has facilities to produce pig iron and may have produced limited quantities during 2006–10, but output is not reported and available information is inadequate to make reliable estimates of output levels.

[6]Reported figure.

[7]Figures reported by State Statistical Bureau that the Government of China considers to be official statistical data.

[8]Includes blast furnace ferroalloys.

[9]Includes unspecified pig iron and direct-reduced iron.

[10]Listed separately.

TABLE 10

RAW STEEL: WORLD PRODUCTION, BY COUNTRY[1, 2, 3]

(Thousand metric tons)

Country[4]	2006	2007	2008	2009	2010
Albania	206	263	380	440	440 e
Algeria	1,158	1,278	646	458	700
Argentina	5,533	5,387	5,441	4,014	5,138
Australia	7,937	8,047	7,724	6,135	7,140
Austria	7,129	7,578	7,594	5,662	7,206
Azerbaijan	54	273	300 e	79 r	129
Bangladesh[e, 5]	10	-- [6]	--	--	--
Belarus	2,100	2,214	2,660	2,449 r	2,672
Belgium	11,238	10,692	10,676	5,636	8,088
Bosnia and Herzegovina, ingot production	490	533	608	519	593
Brazil[7]	30,901	33,782	33,726 r	26,506 r	33,200 e
Bulgaria	2,124	1,909	1,330	726	740
Burma[e]	25	25	25	25	25
Canada	15,493	15,569	15,130	9,000 e	12,000 e
Chile[7]	1,627	1,679	1,523	1,308 r	992 e
China[8]	419,150	489,290	500,490	572,180 r	626,650
Colombia	1,221	1,245	1,053	1,079	1,209
Croatia	81	76	122 r	52	110 e
Cuba	257	262	274	274 e	265 e
Czech Republic	6,862	7,059	6,387	4,594	5,180
Ecuador	85	87	128 r	259 r	368
Egypt	6,045	6,224	6,198	5,508	6,700
El Salvador	72	73	71 r	56 r	51
Ethiopia, all from scrap[e]	60	110	150	150	150
Finland	5,052	4,431	4,418	3,078	3,100
France	19,857	19,252	17,874	12,836	15,416
Germany	47,224	48,550	45,833	32,670 r	43,830
Ghana, all from scrap[e]	25	25	--	--	--
Greece	2,416	2,554	2,400 e	2,082	2,100
Guatemala	292	349	250	224	272
Hong Kong[e]	550	550	550	550	500
Hungary	2,144	2,317	2,160	1,425 r	1,678
India	49,450 r	53,468 r	57,791 r	63,527 r	68,321
Indonesia	3,759	4,160	3,915	3,500 e	3,700
Iran[e]	9,789 [6]	10,051 [6]	9,960	10,000	12,000
Israel[e]	480	480	480	380 r	430 e
Italy	31,550	31,990	30,477	19,737	25,751
Japan	116,266	120,203	118,739	87,500	109,600
Jordan[e]	150	150	150	150	150
Kazakhstan	4,245	4,784	4,244	4,147	4,256
Korea, North[e]	1,180	1,230	1,279 [6]	1,300	1,300
Korea, Republic of	48,455	51,517	53,322	48,752 r	49,000 e
Latvia[e]	550	550	550	550	550
Libya	1,151	1,151	1,137	914	1,100
Luxembourg	2,802	2,858	2,582	2,215	2,563
Macedonia	360	372	252	276 r	291
Malaysia	5,834	6,895	6,423	5,787 r	6,100 e
Mauritania	1	1	2	2 e	2 e
Mexico	16,313	17,573	17,209	14,172	17,041

See footnotes at end of table.

TABLE 10—Continued

RAW STEEL: WORLD PRODUCTION, BY COUNTRY[1, 2, 3]

(Thousand metric tons)

Country[4]	2006	2007	2008	2009	2010
Moldova	675	995	885	425	240 e
Montenegro	163	174	202	90 r	95 e
Morocco	314	314	478	480 e	480 e
Netherlands	6,372	7,368	6,853	5,194	6,651
New Zealand	862	845	853	765 r	850 e
Norway[e]	679	680	590	591 [6]	600
Pakistan	933 r	1,090	1,100	1,100 e	1,100 e
Paraguay	118	132	130	130 e	130 e
Peru[e]	896 [6]	881 [6]	1,150	1,200	1,200
Philippines	558	718	711	700 e	700 e
Poland	9,992	10,621	9,727	7,129 r	8,008
Portugal[e]	1,400	1,400	1,400	1,400	1,400
Qatar	1,003	1,147	1,406	1,400 r	2,000
Romania	6,266	6,261	5,035	2,761 r	3,896
Russia	70,816	72,389	68,700	59,166	66,700 e
Saudi Arabia[e]	3,974 [6]	4,644 [6]	4,670	4,700	5,000
Serbia	1,837	1,478	1,662	1,061 r	1,254
Singapore[e]	607	620	600	620	650
Slovakia	5,094	5,100	4,489	3,747	4,588
Slovenia	627	638	642	430 r	606
South Africa	9,718	9,098	8,269	7,484	8,480
Spain	18,391	18,999	19,048	19,100 e	19,100 e
Sri Lanka[e]	30	30	30	30	30
Sweden[e]	5,435 [6]	5,673 [6]	5,500	5,000	5,000
Switzerland	1,252	1,264	1,260	981	1,000
Syria[e]	70	70	70 [6]	70	70
Taiwan	19,203	20,883	19,222	15,566	20,498
Thailand	4,914 r	5,565 r	5,211 r	3,645 r	4,000 e
Trinidad and Tobago	674	682	489 r	417 r	572
Tunisia	68	61	82	155	180
Turkey	23,308	25,750	26,809 r	25,000 e	30,000 e
Uganda[e]	30	30	30	25	28
Ukraine	40,899	42,830	37,107	29,757	33,559
United Arab Emirates[e]	70	90	90	90	90
United Kingdom	13,931	14,300	13,538	10,080	9,709
United States	98,200	98,100	91,900	59,400	80,500
Uruguay	57	71	70	70 e	70 e
Uzbekistan	730 e	740 e	686	716	745 e
Venezuela	4,864	5,005	4,240	5,000 e	5,000
Vietnam	1,869	2,024	2,250	2,700 r	2,700
Zimbabwe[e]	24 [6]	23 [6]	10	10	--
Total	1,250,000	1,350,000	1,330,000	1,240,000 r	1,420,000

[e]Estimated. [r]Revised. -- Zero.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Steel formed in solid state after melting, suitable for further processing or sale; for some countries, includes material reported as "liquid steel," presumably measured in the molten state prior to cooling in any specific form.

[3]Table includes data available through September 8, 2011.

[4]In addition to the countries listed, Mozambique is known to have steelmaking plants, but available information is inadequate to make reliable estimates of output levels.

[5]Data for year ending June 30 of that stated.

TABLE 10—Continued

RAW STEEL: WORLD PRODUCTION, BY COUNTRY[1, 2, 3]

[6]Reported figure.

[7]Excludes castings.

[8]Figures reported by the State Statistical Bureau that the Government of China considers as official statistical data.