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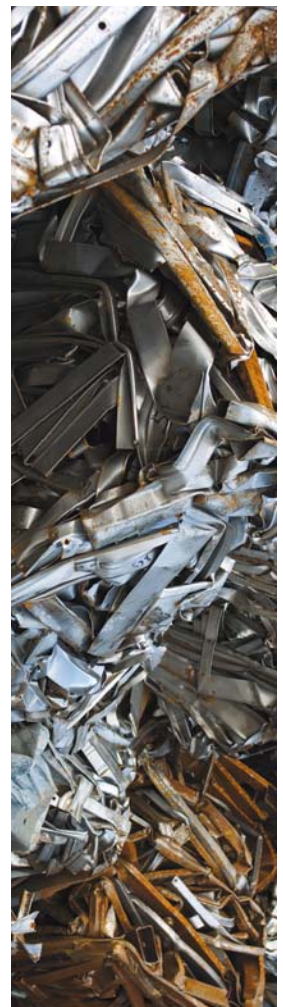
Tel: +44 (0) 207 556 6020

Email: Blevich@metalbulletinresearch.com

Online: www.metalbulletinresearch.com



The Turning Point for Steel Metallica: **A Global Market Outlook to 2021 for Iron Ore, Scrap, DRI/HBI and Pig Iron**





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Enquires for this report should be addressed to:

Brian Levich

Head of Business and Research

Tel: +44 (0) 20 7827 6487

Fax: +44 (0)20 7827 6430

Email: Brian Levich – blevich@metalbulletinresearch.com

Metal Bulletin Research is part of Metal Bulletin Ltd

Nestor House, Playhouse Yard

London EC4V 5EX

UK

www.metalbulletinresearch.com

Raju Daswani, Managing Director, Metal Bulletin Ltd

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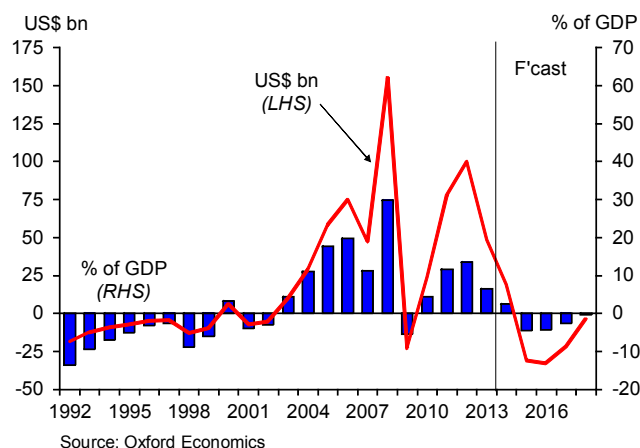
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Steel Metallica Data by Major Country - Saudi Arabia

Saudi Arabia

Figure 9: Saudi Arabia: Government budget balance



Saudi Arabia is a key global supplier of oil, and as such, its overall economic position depends substantially on the oil sector. Manufacturing accounts for around 10% of GDP, but despite numerous attempts to broaden the Saudi economy, growth in this sector has been anaemic. Oil exports make up around 90-95% of total Saudi export earnings, 70%-80% of state revenues, and around 40% of the country's GDP. Saudi Arabia's economy remains, despite attempts at diversification, heavily dependent on oil (although investments in petrochemicals have increased the relative importance of the downstream petroleum sector in recent years). GDP growth has benefitted in the last two years from higher output of oil and gas as well as higher prices. It is forecasted to grow a still solid 4.6% in 2014 and 4.5% in 2015, although this could be revised lower given current oil prices.

Table 112: Saudi Economic Data

	2009	2010	2011	2012	2013	2014	2015	2016-20
GDP (%)	1.8	7.4	8.6	5.8	4.0	4.6	4.5	4.0
Consumer Inflation (%)	4.1	3.8	3.7	2.9	3.5	2.9	3.2	3.3
Population (m)	26.37	26.80	27.76	28.29	28.83	29.46	30.11	n/a
GDP per capita (US\$ at PPP)	16,023	19,326	24,116	25,945	25,851	26,212	27,129	n/a
Government balance (% of GDP)	29.8	(5.4)	4.4	11.6	13.6	6.4	(2.0)	n/a

Source: IMF, OEF, MBR

Its population is predominantly urban, but the economy faces wider issues with unemployment and education. The recent high oil price leaves the economy with record foreign reserves, balance of payments and fiscal surpluses. This cushion has allowed the government to increase its planned expenditure levels in an aggressive expansion, which should underpin construction investment.

One of the main drivers of Saudi construction demand is the six large cities being planned. This is in large part due to the fact that Saudi Arabia's young population has nearly tripled since 1980, and a population growth rate in excess of 2% per annum. 75% of construction activity is currently in the three major cities of Damman, Jeddah and Riyadh. However, this will drop as six new planned cities are built.

Steel Metallics Data by Major Country - Saudi Arabia

Table 113: Economic City Projects

ECONOMIC CITY PROJECTS			
City	Projected Population	Location	Construction Dates
Eastern Province	300,000		2015 – 2025
Jazan	300,000	Jazan	2012 – 2020
King Abdullah	2,000,000	Rabigh	2009 – 2020
Knowledge	300,000	Medinah	2010 – 2020
Prince AbdulAziz bin Mousaed	300,000	Hail	2015 – 2025
Tabuk	300,000	Tabuk	2015 – 2025

The overall construction market is forecast to be in the region of \$385bn based on the government's 9th 5-year plan (2011-15) for social investment as analysed by Middle Eastern Economic Digest (MEED), with \$732bn projects underway or planned in 2014. This compares to \$630bn of construction projects underway or planned in Saudi at the end of 2012 – the highest in the GCC.

Construction activity as a proportion of GDP is growing. It is a combination of private and public sector investment in the oil and gas and petrochemical sectors, aluminium sector, new rail lines, while real estate driven projects in universities, the King Abdullah financial district and in the 6 new cities continue to grow.

Infrastructure investments include:

- \$16.5bn for Mecca transport system
- \$9.4bn for Mecca-Medina rail line
- \$66bn for housing – equivalent to 500,000 new units
- 539 new schools in addition to the 1,900 currently under construction
- \$20bn for new Universities

Energy & resources account for 47% of total construction expenditure:

- Solar energy for up to 20% of electricity by 2020
- 16 new nuclear reactors – not confirmed, but up to \$100bn
- Ras Al Zour desalination and power plant - \$5bn
- Yanbu desalination plant - \$4.3bn
- Jubail Refinery - \$12bn

Steel Metallica Data by Major Country - Saudi Arabia

Transportation

- 3,900km of rail through 3 major projects - \$4.6bn on Jeddah monorail
- \$7.2bn on expansion of Jeddah International Airport
- \$10.7bn on other airports

Within the overall economic outlook, we suggest that construction will grow faster than GDP over the next few years for the following reasons:

- Population is growing fast and will require additional housing needs – up to 1m housing units are planned by 2014 and a new mortgage law in 2011 should facilitate higher domestic ownership as opposed to rentals.
- The government announced a plan to build 500,000 units of affordable housing over the next four years.
- Government is likely to attempt to invest surpluses into infrastructure (hospitals, roads ports, etc.) and is building new cities in the West of the country.
- Government commitment to additional funding to limit popular resentment for limited opportunities
- Continued attempts to diversify away from public sector will stimulate non-residential industrial construction in a variety of industrial sectors
- Ongoing expansions of oil facilities will require increased civil engineering output, although this impact may fade after the completion of the development of 3 large new fields that should result in a return to over-capacity within the Saudi oil fields. As a result, investment levels may drop in primary oil extraction although there will be the ongoing development of the petrochemical, downstream gas and distribution sectors.

However, activity was hit in the second half of 2013 as immigration law reforms resulted in the expulsion of a large number of foreign construction workers and an even larger number of departures of foreign workers that were no longer able to secure working status. This has hit economic activity and limited the ability of projects to move forward. As such, there have been numerous delays and a slowing of demand. However, this appears to have picked back up in 2014.

Fundamentally, we believe that the government will be willing to risk primary deficits to maintain expenditure plans for construction projects over the next five years. The build-up of surpluses and foreign reserves should allow them to do that.

- Crude steel production in Saudi Arabia grew from 3.0 million tonnes in 2000 to 5.9 million tonnes in 2014, and by 2021 we expect that crude steel production will reach 10.0 million tonnes. Similar to Malaysia, 100% of crude steel production in Saudi Arabia between 2000 and 2014 was EAF based, and similar to Malaysia we expected that by 2021 100% of crude steel production will still be EAF based. As we shall see, with the exception of prompt and revert scrap, 100% of the metallica to feed the EAF furnaces of the Saudi steel industry come from domestically produced. With little if any imports of pig iron or scrap, and the only domestic scrap recovery that of revert and prompt scrap, DRI plays not just a major role in the metallica supply of the Saudi steel industry, but almost an exclusive role.

Steel Metallica Data by Major Country - Saudi Arabia

- Unlike Malaysia there is no commercial production of iron ore in Saudi Arabia during the 2000 to 2014 timeframe, and do expect that to change to 2021.
- Even with a blast furnace Saudi Arabia is a net importer of iron ore, with imports totaling 4.6 million tonnes in 2000, 8.5 million tonnes in 2014 and by 2021 we expect that Saudi iron ore imports will reach 14.9 million tonnes.
- 100% of the imported iron ore in Saudi Arabia is used to make DRI. With a readily available supply of natural gas it isn't surprising that Saudi Arabia is a producer of DRI to almost exclusively feed its domestic EAF steelmaking facilities. In 2000 Saudi Arabia produced 3.6 million tonnes of DRI, by 2014 that number had increased to 6.1 million tonnes and by 2021 we expect that Saudi Arabia will produce 9.0 million tonnes of DRI.
- 2.9 million tonnes of obsolete scrap arisings that we believe that less than market quantities were recovered. By 2014 the same situation occurred, 0.4 million tonnes of scrap were recovered (all revert (home) and prompt scrap). We do not expect to see a significant change in the makeup of scrap recovery in Saudi Arabia through 2021.
- With no recovery of obsolete scrap it is no surprise that the obsolete scrap reservoir in Saudi Arabia has increased over the years. In 200 the obsolete scrap reservoir was 66.2 million tonnes, by 2014 it had increased to 110.3 million tonnes and by 2021 we expect that it will reach 147.8 million tonnes. With low cost natural gas and imported iron ore, no obsolete scrap is recovered in Saudi Arabia. That will change at some point. When? It could be an interesting opportunity in the not too distant future.

Table 114: Saudi Arabia relative source of metallica (yielded) 2000-2021

	2000	2014	2021
scrap	15.4%	24.0%	24.0%
pig iron	0.0%	0.6%	0.6%
DRI	84.6%	75.4%	75.4%

Steel Metallics Data by Major Country - Saudi Arabia

Table 115: Saudi Arabia Country Data 2000-2021

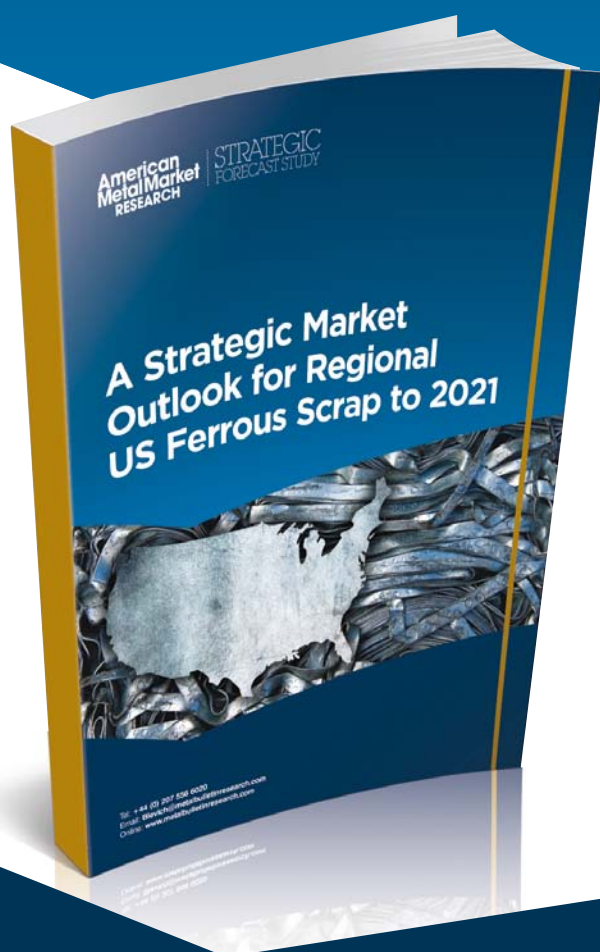
Country Data	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Crude steel production	2,981	3,413	3,570	3,944	3,902	4,186	3,974	4,644	4,667	4,690	5,015	5,275	5,203	5,352	5,874	6,462	7,000	7,500	8,150	9,000	9,250	10,000
Oxygen steel production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAF steel production	2,981	3,413	3,570	3,944	3,902	4,186	3,974	4,644	4,667	4,690	5,015	5,275	5,203	5,352	5,874	6,462	7,000	7,500	8,150	9,000	9,250	10,000
Open hearth steel production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent oxygen steel production	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent EAF steel production	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent open hearth steel production	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Continuous cast production	2,981	3,413	3,570	3,944	3,902	4,186	3,974	4,644	4,667	4,690	5,015	5,275	5,203	5,352	5,874	6,462	7,000	7,500	8,150	9,000	9,250	10,000
Ingot production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent continuous cast	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent ingot cast	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Foundry iron production	238	273	286	316	312	335	318	372	373	375	401	422	425	430	472	519	562	603	655	723	743	803
Pig iron production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pig iron exports	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pig iron imports	-	-	-	45	123	99	26	8	-	71	9	-	27	40	44	48	52	56	61	67	69	75
Pig iron ADC	-	-	-	45	123	99	26	8	-	71	9	-	27	40	44	48	52	56	61	67	69	75
Iron ore production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron ore exports	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron ore imports	4,550	4,430	4,676	4,320	4,100	9,722	5,546	4,931	7,638	6,039	9,019	7,516	4,461	9,752	8,506	9,357	10,136	10,860	11,801	13,032	13,394	14,480
Iron ore ADC	4,550	4,430	4,676	4,320	4,100	9,722	5,546	4,931	7,638	6,039	9,019	7,516	4,461	9,752	8,506	9,357	10,136	10,860	11,801	13,032	13,394	14,480
DRI production	3,059	2,877	3,280	3,285	3,406	3,626	3,581	4,340	4,970	5,030	5,510	5,810	5,660	6,070	5,294	5,824	6,309	6,759	7,345	8,111	8,336	9,012
DRI exports	1	1	0	1	1	105	30	12	-	-	18	-	96	-	22	24	26	28	31	34	35	38
DRI imports	1	1	0	0	0	1	0	253	565	516	884	800	1,250	-	105	116	125	134	146	161	166	179
DRI ADC	3,059	2,877	3,280	3,284	3,405	3,521	3,551	4,581	5,535	5,546	6,376	6,610	6,813	6,070	5,377	5,915	6,408	6,865	7,460	8,239	8,467	9,154
Scrap ADC	551	1,257	1,044	1,448	1,198	1,450	1,235	1,036	118	64	301	317	312	374	1,696	1,865	2,021	2,165	2,353	2,598	2,670	2,887
Scrap recovery	517	1,256	1,044	1,449	1,195	1,379	1,261	1,614	408	64	301	318	179	373	1,696	1,865	2,021	2,165	2,353	2,598	2,670	2,887
Revert	179	205	214	237	234	251	238	279	280	281	301	317	312	321	352	388	420	450	489	540	555	600
Prompt	372	707	726	807	816	924	997	757	-	-	-	-	-	53	1,343	1,478	1,601	1,715	1,864	2,058	2,115	2,287
Obsolete	-	344	104	405	145	204	26	578	290	-	0	1	-	-	-	-	-	-	-	-	-	-
Obsolete scrap arisings	2,941	3,043	3,155	3,282	3,427	3,587	3,762	3,951	4,153	4,367	4,596	4,838	5,032	5,241	5,473	5,726	5,997	6,283	6,585	6,904	7,239	7,594
Obsolete scrap recovery/obsolete scrap arisings	0%	11%	3%	12%	4%	6%	1%	15%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Scrap exports	2	0	1	1	1	1	134	647	290	-	0	1	0	0	-	-	-	-	-	-	-	-
Scrap imports	36	2	1	0	4	72	109	69	-	-	-	-	133	1	-	-	-	-	-	-	-	-
Scrap reservoir	66,188	68,226	70,594	72,765	75,319	77,950	80,907	83,471	86,500	90,002	93,698	97,597	101,654	105,878	110,292	114,915	119,763	124,848	130,185	135,787	141,669	147,846
Recovery ratio needed to be scrap self sufficient	1%	11%	NA	NA	4%	8%	NA	NA	NA	NA	NA	NA	3%	0%	NA	NA	NA	NA	NA	NA	NA	NA

Steel Metallica Data by Major Country - Saudi Arabia

Table 116: Saudi Arabia country percentages of global 2000-2021

Percent of total	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Crude steel production	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%
Oxygen steel production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EAF steel production	1.0%	1.2%	1.2%	1.2%	1.1%	1.1%	1.0%	1.1%	1.1%	1.3%	1.2%	1.2%	1.2%	1.1%	1.2%	1.3%	1.3%	1.4%	1.4%	1.5%	1.5%	1.6%
Open hearth steel production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Continuous cast production	0.4%	0.5%	0.4%	0.5%	0.4%	0.4%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%
Ingot production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Foundry iron production	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.5%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%
Pig iron production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pig iron exports	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pig iron imports	NA	NA	NA	0.3%	0.7%	0.5%	0.1%	0.0%	NA	0.6%	0.1%	NA	0.2%	0.3%	0.3%	0.3%	0.3%	0.4%	0.3%	0.4%	0.4%	0.4%
Pig iron ADC	NA	NA	NA	0.0%	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Iron ore production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron ore exports	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron ore imports	0.9%	0.9%	0.9%	0.7%	0.6%	1.3%	0.7%	0.6%	0.8%	0.6%	0.9%	0.7%	0.4%	0.8%	0.8%	0.8%	0.9%	0.9%	1.0%	1.0%	1.0%	1.1%
Iron ore ADC	0.4%	0.4%	0.4%	0.4%	0.3%	0.6%	0.3%	0.2%	0.4%	0.3%	0.4%	0.3%	0.1%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%
DRI production	7.2%	7.3%	7.4%	6.8%	6.2%	6.4%	6.0%	6.4%	7.3%	7.8%	7.8%	8.1%	7.9%	8.3%	7.1%	7.3%	7.6%	7.7%	7.8%	8.2%	8.0%	8.2%
DRI exports	NA	0.0%	NA	0.0%	NA	1.5%	0.4%	0.2%	NA	NA	0.4%	NA	2.7%	NA	0.4%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
DRI imports	NA	NA	NA	NA	NA	NA	NA	3.1%	6.5%	8.5%	9.4%	9.1%	12.1%	NA	1.4%	1.2%	1.3%	1.3%	1.4%	1.5%	1.5%	1.5%
DRI ADC	7.2%	7.3%	7.5%	6.7%	6.1%	6.1%	5.9%	6.6%	7.9%	8.4%	8.5%	8.6%	8.6%	7.7%	7.0%	6.8%	7.1%	7.2%	7.3%	7.7%	7.5%	7.7%
Scrap ADC	0.1%	0.3%	0.3%	0.3%	0.2%	0.3%	0.2%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%
Scrap recovery*	0.2%	0.4%	0.3%	0.4%	0.3%	0.3%	0.3%	0.3%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%
Revert	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%
Prompt	0.4%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.5%	NA	NA	NA	NA	NA	0.0%	0.7%	0.7%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%
Obsolete	NA	0.2%	0.0%	0.2%	0.1%	0.1%	0.0%	0.2%	0.1%	NA	NA	0.0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Obsolete scrap arisings	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%
Scrap exports	0.0%	NA	NA	0.0%	0.0%	0.0%	0.1%	0.7%	0.3%	NA	NA	0.0%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Scrap imports	0.1%	0.0%	NA	NA	0.0%	0.1%	0.1%	0.1%	NA	NA	NA	NA	0.1%	NA	NA	NA	NA	NA	NA	NA	NA	NA
Scrap reservoir*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
* percentage for top 40 countries																						

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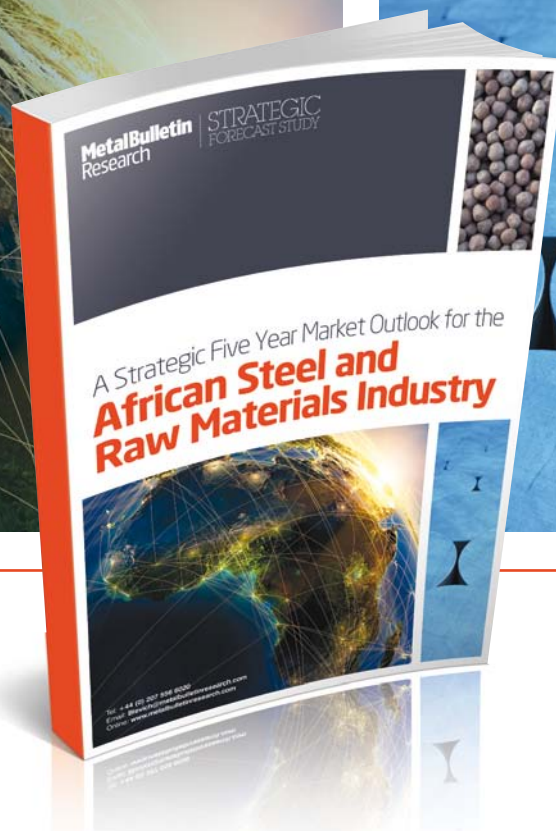
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