

SUSTAINABILITY INDICATORS

2003 - 2018

Published 2 December 2019

Environmental performance																
1	Greenhouse gas emissions (tonnes CO₂/tonne crude steel cast)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	1.6*	1.7*	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.87	1.88	1.83	1.82 (p)
2	Energy Intensity (GJ/tonne crude steel cast)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	19*	19.1*	20.0	20.6	20.3	20.4	20.6	20.3	19.9	19.6	19.9	19.8	20.3	20.3	19.9	19.8 (p)
3	Material efficiency (% of materials converted to products & byproducts)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	97.1	96.1	97.9	97.2	97.9	98.0	97.9	97.7	94.4	96.5	96.4	97.5	96.8	97.5	96.3	96.3
4	Environmental management systems (EMS) (% of employees & contractors working in EMS-registered production facilities)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	86.4	91.9	84.0	85.5	85.1	86.6	88.9	87.6	89.9	89.5	90.2	94.0	93.6	97.1	96.8	95.8
Social performance																
5	Lost-time injury frequency rate (injuries/million hours worked)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
		4.8	4.1	4.6	4.4	3.1	2.5	2.3	1.9	1.5	1.6	1.4	1.2	1.01	0.97	0.84
6	Employee training (training days/employee)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	8.1	9.9	12.1	10.5	11.1	8.0	8.5	6.7	7.7	7.9	7.8	6.4	6.8	7.0	6.1	6.4
Economic performance																
7	Investment in new processes and products (Percent of revenue)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	6.0	6.2	6.7	7.8	7.9	8.3	10.2	8.8	8.3	10.3	8.6	7.4	12.6	13.0	5.9	6.0
8	Economic Value Distributed (Percent of revenue)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
					83.0	68.2	92.3	91.7	93.1	97.4	96.1	96.6	96.7	98.8	97.0	93.9

Notes:

(p) = preliminary; data collection in progress

Indicators 1 & 2: These indicators are calculated using route-specific energy and CO₂ intensity for the basic oxygen furnace and electric arc furnace. The indicators are also weighted based on the production share of each route. Indicator 1 includes CO₂ emissions only as these make up approximately 93% of all steel industry greenhouse gas emissions.

Indicator 5: Lost time injury frequency rate includes fatalities and is calculated based on figures including contractors and employees.

Indicator 7: Investment in new processes and products includes capital expenditure and R&D investment.

SUSTAINABILITY INDICATORS DEFINITIONS AND RELEVANCE

Environmental performance			
	INDICATOR	DEFINITION	RELEVANCE
1.	Greenhouse gas (GHG) emissions	This indicator calculates tonnes of CO ₂ emissions normalized against production (tonnes of crude steel cast). The calculation is based on route-specific energy and CO ₂ intensities for 3 steel production routes: 1) basic oxygen furnace 2) electric arc furnace, and 3) open hearth furnace. This indicator is weighted based on the production share of each route.	Reducing GHG emissions in steelmaking must be tackled on a global level. Making the substantial CO ₂ reductions required will need technology transfer, collaboration and breakthrough technologies. Steel products also play an important role in a low carbon economy due to their long life cycle, 100% recyclability, and innovative qualities.
2.	Energy intensity	This indicator measures the energy consumed normalized against production (tonnes of crude steel cast). The calculation is based on route-specific energy and CO ₂ intensities for 3 steel production routes: 1) basic oxygen furnace 2) electric arc furnace, and 3) open hearth furnace. This indicator is weighted based on the production share of each route.	Steel production is energy-intensive. The steel industry has made significant reductions in energy consumption in the past decades resulting in benefits to the environment while ensuring economic competitiveness.
3.	Material efficiency	This indicator measures the percentage of raw materials used on-site to make crude steel converted to products and by-products. The industry's goal is zero waste.	The recovery and use of by-products within and outside the steel industry combined with the responsible management of natural resources contribute to material efficiency and help to prevent waste.
4.	Environmental management system (EMS)	This indicator measures the percentage of employees and contractors who work in a production facility that has been certified to a recognised international EMS standard such as ISO 14001*, or EMAS**.	Registered environmental management systems are an effective way to manage environmental performance and to ensure legal compliance.
Social performance			
	INDICATOR	DEFINITION	RELEVANCE
5.	Lost time injury frequency rate (LTIFR)	A Lost Time Injury (LTI) is an incident that causes an injury that prevents the person from returning to his next scheduled shift or work period. Lost Time Injury Frequency Rate (LTIFR) is the number of Lost Time Injuries per million man-hours. LTIFR includes fatalities.	Our industry employs millions of people. Nothing is more important than the safety and health of the people who work in the steel industry.
6.	Employee training	This indicator measures the total days of training per employee. The result of the calculation is the average number of training days per employee and year. Training may include various types of development programmes such as classroom instruction, computer-based training, self-study and learning or on-the-job instruction. Employee training does not focus on safety and health, but may include it.	Human capital is a key asset for all organisations and a main driver for the creation of value. Training programmes aim to expand the knowledge and skills of employees and help them to make the best use of their talents.

* <http://www.iso.org/iso/home/standards/management-standards/iso14000.htm>

** http://ec.europa.eu/environment/emas/index_en.htm

SUSTAINABILITY INDICATORS DEFINITIONS AND RELEVANCE

Economic performance			
	INDICATOR	DEFINITION	RELEVANCE
7.	Investment in new processes and products	<p>This indicator measures the value of investments made on capital expenditure, and research and development expressed as a percentage of revenue. Capital expenditure refers to money used to acquire or improve long-term physical assets such as property, plants, machinery and equipment, industrial buildings and warehouses. Research and development refers to money used with the prospect of gaining new scientific or technical knowledge to develop new products, processes, and services. The result is presented as percentage of annual revenue.</p>	Investments in new processes and R&D contribute to a sustainable steel industry.
8.	Economic value distributed (EVD)	<p>This indicator aims to quantify the value distributed to society by the steel industry. It includes direct and indirect contributions, regardless of the country's financial structure (e.g. all contributions are captured - whether made directly from the company to the community or indirectly from the company through government taxes, shareholder dividends or employee wages, etc.).</p> <p>It is a sum of:</p> <ul style="list-style-type: none"> • Operating costs (payments to suppliers, contractors, etc.) • Employee wages and benefits (gross values, including employee tax paid) • Dividends paid to all shareholders (including non-controlling interest) • Interest payments made to providers of loans • Payments to government (gross taxes and royalties, not including employee tax paid) • Community investments (voluntary contributions and investments of funds in the broader community, including donations and scholarships, etc.). <p>The result is presented as billion US\$ and US\$ as a percentage of total revenue.</p>	Steel is critical to economic growth. It is important to quantify the value companies create and to establish how much of this wealth is distributed to society.

SUSTAINABILITY INDICATORS

Contributing organisations 2018

A total of 64 steel organisations contributed data for one or more of the 2018 indicators. Publicly available data was used for 21 companies.

1	Acciaierie Bertoli Safau S.p.A.	57	thyssenkrupp AG
2	ACERINOX S.A.	58	TMK (PAO)
3	Aichi Steel Corporation	59	T INECKÉ ŽELEZÁRNY, a.s
4	Ansteel Group Corporation	60	Tung Ho Steel Enterprise Corporation
5	Aperam	61	Usinas Siderúrgicas de Minas Gerais S.A. (USIMINAS)
6	ArcelorMittal	62	voestalpine AG
7	Badische Stahlwerke GmbH	63	Vallourec
8	BlueScope Steel Limited	64	Yieh United Steel Corporation (YUSCO)
9	Böllinghaus GmbH & Co. KG		
10	CELSA Group		
11	China Baowu Steel Group Corporation Limited		
12	China Steel Corporation (CSC)		
13	Cogne Acciai Speciali Spa		
14	Çolako lu Metalurji A. .		
15	Daido Steel Co., Ltd.		
16	El Marakby for Metallic Industries		
17	Emirates Steel Industries Company PJC		
18	Essar Steel Ltd.		
19	EVRAZ		
20	EZZ Steel		
21	Gerdau S.A.		
22	HBIS Group Co., Ltd.		
23	HYUNDAI Steel Company		
24	HYUNDAI BNG STEEL Company Ltd.		
25	IMIDRO		
26	JFE Steel Corporation		
27	Jindal Stainless Limited		
28	JSW Steel Limited		
29	Liberty OneSteel		
30	Metalloinvest Management Company		
31	Metinvest Holding LLC		
32	NatSteel Holdings Pte Ltd		
33	Nippon Kinzoku Co., Ltd.		
34	Nippon Steel Stainless Steel Corpation		
35	Nippon Steel and Sumitomo Metal Corporation (NSSMC)		
36	Nippon Steel Nisshin Co., Ltd.		
37	Nippon Yakin Kogyo Co., Ltd.		
38	Novolipetsk Steel (NLMK Group)		
39	Outokumpu Oyj		
40	Ovako Group AB		
41	POSCO		
42	POSCO Specialty Steel Co., Ltd.		
43	POSCO-Thainox Public Company Limited		
44	Qatar Steel Company (Q.S.C.)		
45	Rashtriya Ispat Nigam Ltd (VIZAG Steel)		
46	SABIC-Saudi Basic Industries Corporation (HADEED)		
47	Sahaviriya Steel Industries Public Company Limited (SSI)		
48	SIJ Slovenian Steel Group		
49	Severstal (PAO)		
50	SSAB AB		
51	Stahlbeteiligungen Holding S.A. (Riva Group)		
52	Tata Steel Europe		
53	Tata Steel limited		
54	Tang Eng Iron Works Co. Ltd.		
55	Techint Group (Tenaris)		
56	Ternium		

Publicly available data was used for the 21 companies below:

1	AK Steel Corporation
2	Altos Hornos de México, S.A.B. de C.V. (AHMSA)
3	Anyang Steel
4	Baotou Steel
5	Benxi Steel
6	ERDEMIR Group
7	Jindal Steel and Power Limited (JSPL)
8	Kobe Steel, Ltd
9	Liuzhou Steel
10	Maanshan Steel
11	Magnitogorsk Iron & Steel Works (MMK)
12	Nanjing Steel
13	Nucor Corporation
14	Sanming Steel
15	Sanyo Special Steel Co., Ltd.
16	Shagang Group
17	Shougang Group
18	Steel Authority of India Ltd. (SAIL)
19	Taiyuan Steel
20	United States Steel Corporation
21	Valin Group

SUSTAINABILITY INDICATORS

Level of participation
per indicator 2003 - 2018

Published 2 December 2019

Number of contributing organisations for indicators 1 to 4																	
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Greenhouse gas (GHG) emissions	25	25	27	30	51	57	55	55	54	52	52	53	51	53	58	N/A
2	Energy intensity	25	25	27	30	51	57	55	55	54	52	52	53	51	53	58	N/A
3	Material efficiency	25	27	27	31	25	26	36	38	41	42	44	35	48	41	33	37
4	Environment Management Systems (EMS)	26	34	31	35	25	27	36	42	44	43	45	40	50	56	42	47
Table 2: Number of reporting organisations for indicators 5 and 6																	
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
5	Lost time injury frequency rate (LTIFR)		35	33	36	44	41	64	90	92	89	74	77	79	114	69	69
6	Employee training	26	33	28	31	24	26	33	38	39	38	38	37	45	38	33	40
Table 3: Number of reporting organisations for indicators 7 and 8																	
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
7	Investment in new processes and products*	31	35	34	36	31	32	38	41	42	40	34	56	58	53	47	42
8	Economic value distributed (EVD) **					24	25	34	37	42	42	40	60	64	53	47	53

*Investment in new processes and products

** Data collection for Economic value distributed (EVD) started in 2007