

# Melting point

Which steel companies are ready for the low-carbon transition?

## Executive Summary

July 2019



Authors: Tom Crocker, Luke Fletcher, Jinxi Chen and Alice Newman

CDP's sector research for investors provides the most comprehensive climate and water-related data and analysis on the market. The Eitel IRRI survey ranked CDP the number one climate change research house for three years in a row.

CDP's sector research series takes an in-depth look at high impact industries one-by-one. Reports are now available on the automotive industry, electric utilities, diversified chemicals, diversified mining, cement, steel, oil & gas, capital goods, consumer goods and shipping.

Full sector reports are exclusively available to CDP investor signatories and members through the online investor dashboard and include detailed analysis, company insights and methodology. Members have enhanced access to analysts within the Investor Research team and the full GHG emissions dataset. To become a CDP signatory or member and gain access to the full reports and other tools, including CDP company disclosure data, please contact [investor@cdp.net](mailto:investor@cdp.net).

For more information see:  
<https://www.cdp.net/en/investor/sector-research>  
<https://www.cdp.net/en/dashboards/investor>

**Authors:**  
Tom Crocker  
Luke Fletcher  
Jinxi Chen  
Alice Newman

**Acknowledgements:**  
Dr Paul Griffin  
Matthew Wenban-Smith - ResponsibleSteel™

## Accessing the full report

The full report is available only to CDP investor signatories and members. Signatories can access the full report from <https://www.cdp.net/en/dashboards/investor>. Please contact your CDP account manager or [investor@cdp.net](mailto:investor@cdp.net) if you are not able to log in. Members have enhanced access to analysts within the Investor Research team.

# Linking climate metrics to earnings for steel companies

This report updates and expands CDP's research and League Table for steel companies, first published in October 2016. It ranks 20 of the largest and highest-impact publicly listed steel companies on business readiness for a low-carbon transition. The companies in aggregate represent 30% of global steel production.

The steel industry generates between 7% and 9% of global greenhouse gas emissions from fossil fuel use and industry. To align with the International Energy Agency's 2-Degrees Scenario (IEA 2DS), the sector will be required to reduce its emissions intensity by 65% by 2050, compared to 2014 levels.

The industry has historically achieved significant improvements in energy efficiency. However, modern steel plants are currently operating near optimal technological limits and around 70% of primary steel is still produced via the highly efficient but energy intensive BF-BOF route.<sup>1</sup>

To align with a transition to a low-carbon economy, the steel industry will require a step-change in emissions reductions through the deployment and commercialization of radical mitigation technologies and alternative steelmaking processes.

There are four key areas assessed in the League Table, which are aligned with the recommendations from the TCFD:

**Transition risks:** We assess companies' Scope 1+2 emissions intensities and energy performance, as well as data transparency and Scope 3 emissions reporting.

**Physical risks:** We analyse company exposure to localized water stress issues on a facility-by-facility basis across their entire operations. We compare this water stress exposure with companies' water consumption and governance frameworks.

**Transition opportunities:** We assess companies' involvement in low-carbon innovations in relation to steelmaking and circularity. We also analyse levels of R&D and investment in renewable energy.

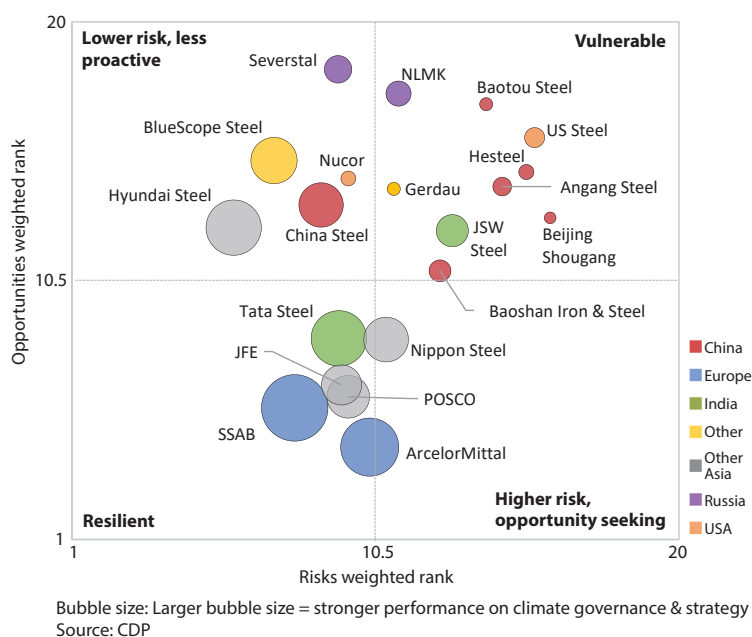
**Climate governance and strategy:** We analyse companies' governance frameworks including emissions reduction targets and the alignment of governance and remuneration structures with low-carbon objectives. We look at which companies are conducting scenario analysis and aligning with low-carbon initiatives.

## Key findings

- SSAB top the ranking, with **ArcelorMittal**, **Hyundai Steel** and **Tata Steel** closely ranked together in second, third and fourth respectively.
- Companies ranking in the bottom three are **Inner Mongolia Baotou Steel**, **US Steel** and **Beijing Shougang**.
- There is a significant geographical divide between the highest and lowest performing companies.** Chinese, Russian and U.S. companies lag behind in terms of disclosure and performance in key areas.
- The analysis finds **the weighted average Value at Risk for the companies to be 14% of net present value under a 2°C scenario**, where global carbon prices rise to US\$100 per tonne CO<sub>2</sub> by 2040.<sup>2</sup>
- Reporting on emissions and energy consumption is inconsistent across the sample. **Only four companies clearly disclose emissions intensity in line with worldsteel guidance.**<sup>3</sup>
- Progress towards reducing Scope 1+2 emissions from steelmaking has been limited.** Emissions intensities have been reduced at an average rate of 0.92% p.a. since 2013.
- Across the 20 companies, over 50% of inland steel capacity is located in areas of high water stress risk.** Company operations located in China and India are most at risk.
- Only five companies have officially supported the TCFD.**
- Seven of the 20 companies have set up Power Purchase Agreements** to utilise renewable energy in their steelmaking operations.

- Six companies have delivered technologies, that we consider to be transformative.** Innovations include the emergence of hydrogen steelmaking projects and a number of CCUS initiatives.
- 60% of companies have set emissions reduction targets**, yet only two companies are aligned with a 2°C or below emissions pathway. SSAB has set a goal to reach carbon neutrality by 2045 across its entire operations.
- Companies are beginning to utilise scenario analysis** to assess the impacts of climate change on their business. Seven companies use an internal carbon price.

**Figure 1: Opportunity vs. risk for low-carbon transition**



1. Blast Furnace-Basic Oxygen Furnace

2. Under our central 2°C scenario, the Value at Risk for individual companies ranges from 2.5% to 30% of net present value.

3. To calculate an emissions intensity that enables like-for-like comparison, worldsteel guidance is to include Scope 1, Scope 2 and upstream Scope 3 emissions relating to the procurement of pre-processed materials.



The summary League Table below presents headline company findings. It is based on detailed analysis across a range of carbon and transitional indicators which could have a significant impact on company performance. The League Table is designed to serve as a proxy for business readiness in an industry which will face increasing challenges as governments increase efforts to implement the Paris Agreement. Companies placed towards the bottom are deemed less prepared for a low-carbon transition.

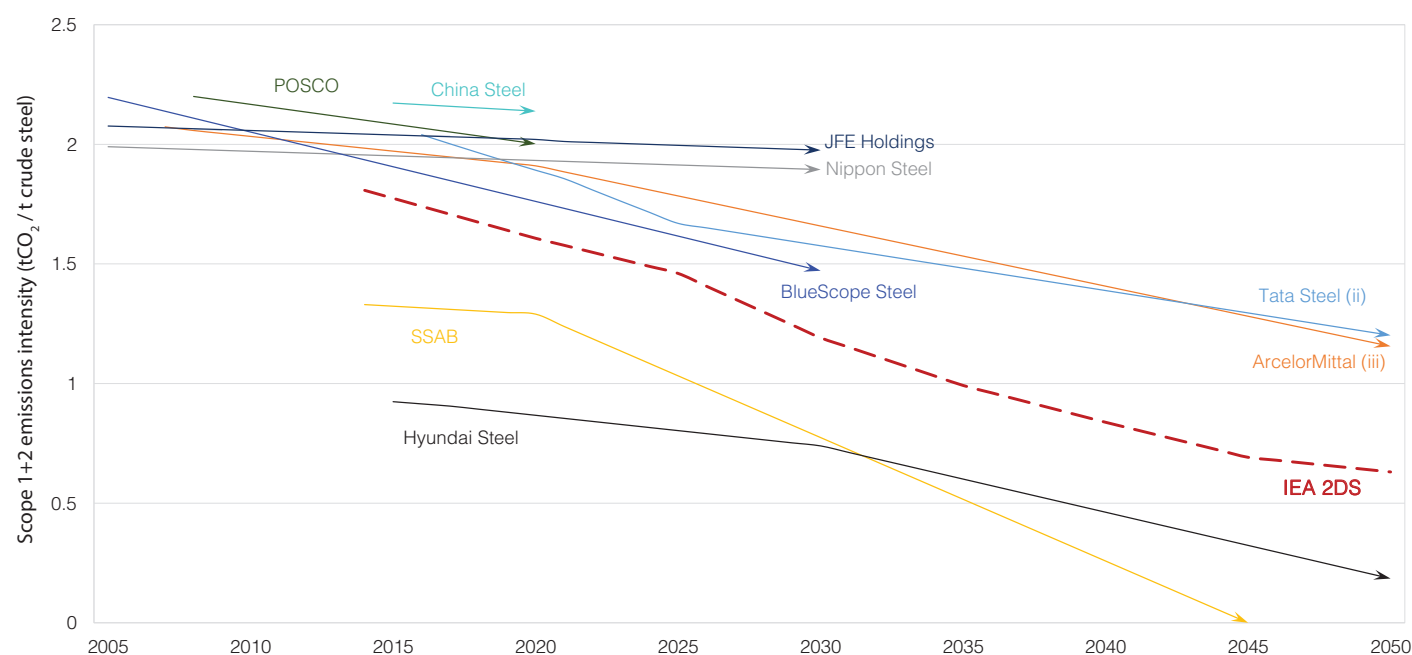
**Figure 2: League Table summary<sup>(i)</sup>**

LT rank	Company <sup>(ii)</sup>	Country / region	Average market cap 2018 (US\$bn)	2018 steel production (million tonnes)	Weighted rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank	Production by process (%)
										Open Hearth ■ BOF ■ EAF
1	SSAB	Sweden	4.5	8.0	6.25	3	6	2	1	
2	ArcelorMittal	Luxembourg	31	93	7.34	10	10	1	2	
3	Hyundai Steel	South Korea	6.4	24	8.25	1	3	9	4	
4	Tata Steel	India	9.7	27	8.34	8	4	6	3	
5	POSCO	South Korea	26	43	8.72	6	8	3	8	
6	JFE Holdings	Japan	13	28	8.94	11	2	4	9	
7	Nippon Steel	Japan	20	48	9.67	13	5	5	6	
8	BlueScope Steel	Australia	6.5	6.0	10.13	2	7	16	5	
9	China Steel	Taiwan	13	15	10.37	9	1	11	7	
10	JSW Steel	India	12	17	12.59	14	14	8	10	
11	Baoshan Iron & Steel	China	28	47	12.71	15	11	7	13	
12	Nucor	USA	20	22	13.07	4	16	14	17	
13	Severstal	Russia	13	12	13.26	5	9	20	11	
14	Gerdau	Brazil	6.9	15	13.65	7	15	12	18	
15	Novolipetsk Steel (NLMK)	Russia	15	17	13.91	12	13	19	12	
16	Angang Steel	China	6.8	25	14.64	20	12	13	15	
17	Hesteel	China	5.3	27	15.35	17	17	15	16	
18	Beijing Shougang	China	3.6	16	15.38	19	20	10	20	
19	US Steel	USA	5.8	15	15.49	18	19	17	14	
20	Inner Mongolia Baotou Steel	China	13	15	15.74	16	18	18	19	

**Weighting** 30% 10% 30% 30%

(i) Weighted ranks are calculated for each area. We display non-weighted ranks in this summary for simplicity only.  
(ii) Angang Steel, Baoshan Iron & Steel, Beijing Shougang, BlueScope Steel, Gerdau, Inner Mongolia Baotou Steel, NLMK, Nucor and US steel are non-responders to CDP's 2018 climate change questionnaire. We encourage investors to raise this lack of transparency in discussions with company management.  
Source: CDP

**Figure 3: Company emissions reduction targets and ambitions<sup>(i)</sup>**



(i) Target trajectories illustrate pathways from base year to target year emissions intensities. Therefore trajectories shown for companies to 2018 will differ from actual historical values, dependent on companies' performance relative to their targets.  
(ii) Tata Steel's target pathway is calculated by combining Tata Steel's goal of <2 tCO<sub>2</sub>/tcs emissions intensity by 2025 for its Indian operations and Tata Steel Europe's ambition to be a carbon-neutral steelmaker by 2050.  
(iii) ArcelorMittal's target pathway is calculated using its corporate target out to 2020 and then its ambition to achieve carbon neutrality in its European operations by 2050. We note that in 2020 the company is planning to set a 2030 reduction target.

## CDP Investor Research

### CDP UK

#### Carole Ferguson

Head of Investor Research  
+44 (0) 20 3818 3956  
carole.ferguson@cdp.net

#### Luke Fletcher

Senior Analyst,  
+44 (0) 20 3818 3951  
luke.fletcher@cdp.net

#### Ling Sin Fai Lam

Senior Analyst,  
+44 (0) 20 3818 3936  
ling.sinfailam@cdp.net

#### Tom Crocker

Analyst,  
+44 (0) 20 3818 3935  
tom.crocker@cdp.net

#### Christie Clarke

Analyst,  
+44 (0) 20 3818 3951  
christie.clarke@cdp.net

#### Kane Marcell

Analyst,  
+44 (0) 20 3818 3956  
kane.marcell@cdp.net

#### Alice Newman

Analyst,  
+44 (0) 20 3818 3936  
alice.newman@cdp.net

#### Jinxi Chen

Analyst,  
+44 (0) 20 3818 3935  
jinxi.chen@cdp.net

### CDP

Plantation Place South  
60 Great Tower Street  
London EC3R 5AZ  
United Kingdom

Tel: +44 (0) 203 818 3900

@cdp  
www.cdp.net  
info@cdp.net

#### Important Notice:

CDP is not an investment advisor, and makes no representation regarding the advisability of investing in any particular company or investment fund or other vehicle. A decision to invest in any such investment fund or other entity should not be made in reliance on any of the statements set forth in this publication. While CDP has obtained information believed to be reliable, it makes no representation or warranty (express or implied) as to the accuracy or completeness of the information and opinions contained in this report, and it shall not be liable for any claims or losses of any nature in connection with information contained in this document, including but not limited to, lost profits or punitive or consequential damages.

The contents of this executive summary report may be used by anyone providing acknowledgement is given to CDP. This does not represent a license to repackage or resell any of the data reported to CDP and presented in this report. If you intend to repackage or resell any of the contents of this report, you need to obtain express permission from CDP before doing so.

'CDP' refers to CDP Worldwide, a registered charity number 1122330 and a company limited by guarantee, registered in England number 05013650.

© 2019 CDP Worldwide. All rights reserved.

## CDP contacts

### CDP UK

#### Frances Way

Chief Strategy Officer

#### Sebastian O'Connor

Senior Account Manager,  
Investor Engagement  
+44 (0) 20 3818 3900  
sebastian.oconnor@cdp.net

### CDP North America

#### Emily Kreps

Head of Investor Initiatives  
+1 646 517 6470  
emily.kreps@cdp.net

#### Radhika Mehrotra

Manager, Investor Initiatives  
+1 646 517 6471  
radhikamehrotra@cdp.net

### CDP Europe

#### Laurent Babikan

Director of Investor Engagement  
+33 658 66 60 13  
laurent.babikan@cdp.net

#### Torun Reinhammar

Senior Account Manager,  
Investor Engagement  
+46 (0)705 365903  
torun.reinhammer@cdp.net

#### Matteo Brezza

Account Manager, Investor Engagement  
+49 30629033120  
matteo.brezza@cdp.net

### CDP Japan

#### Kyoko Narita

Senior Account Manager,  
Investor Initiatives  
+81 (0)3 6869 3928  
kyoko.narita@cdp.net

## CDP Board of Trustees

#### Alan Brown (Chairman)

#### Annise Parker

#### Christine Loh

#### Jane Ambachtsheer

#### Jeremy Burke

#### Jeremy Smith

#### Katherine Garrett-Cox

#### Martin Wise

#### Rachel Kyte

#### Ramakrishnan Mukundan

#### Sonia Medina

#### Stephen T Chow

#### Takejiro Sueyoshi

### Media enquiries

#### Rojin Kiadeh

Communications Manager,  
+44 (0) 20 3818 3973  
rojin.kiadeh@cdp.net

#### Tess Harris

Communications Manager,  
+44 (0) 20 3818 3973  
tess.harris@cdp.net