

# Melting point

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

Executive Summary

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# 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.

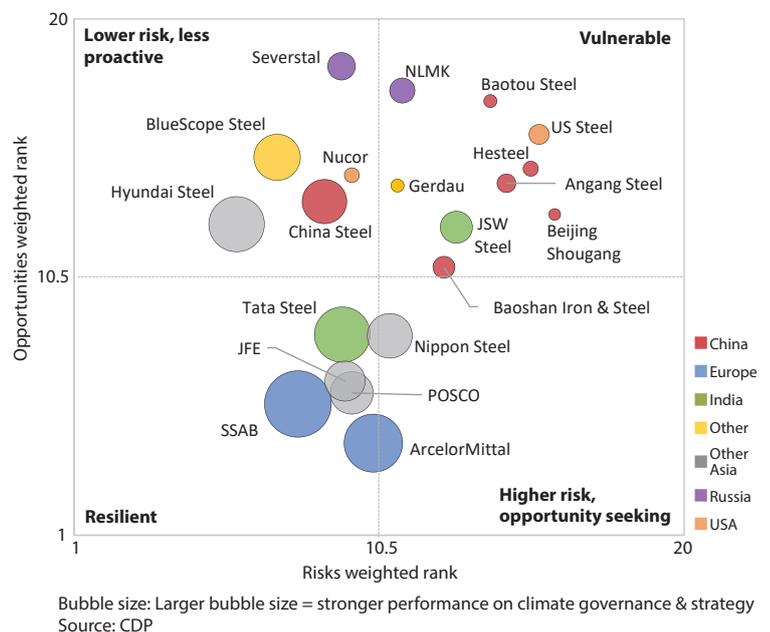
**Climate governance and strategy:** We analyse companies' governance frameworks including emissions reduction targets and the alignment of governance and remuneration structures with low-carbon objectives. We look at which companies are conducting scenario analysis and aligning with low-carbon initiatives.

## 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	EEAF
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**

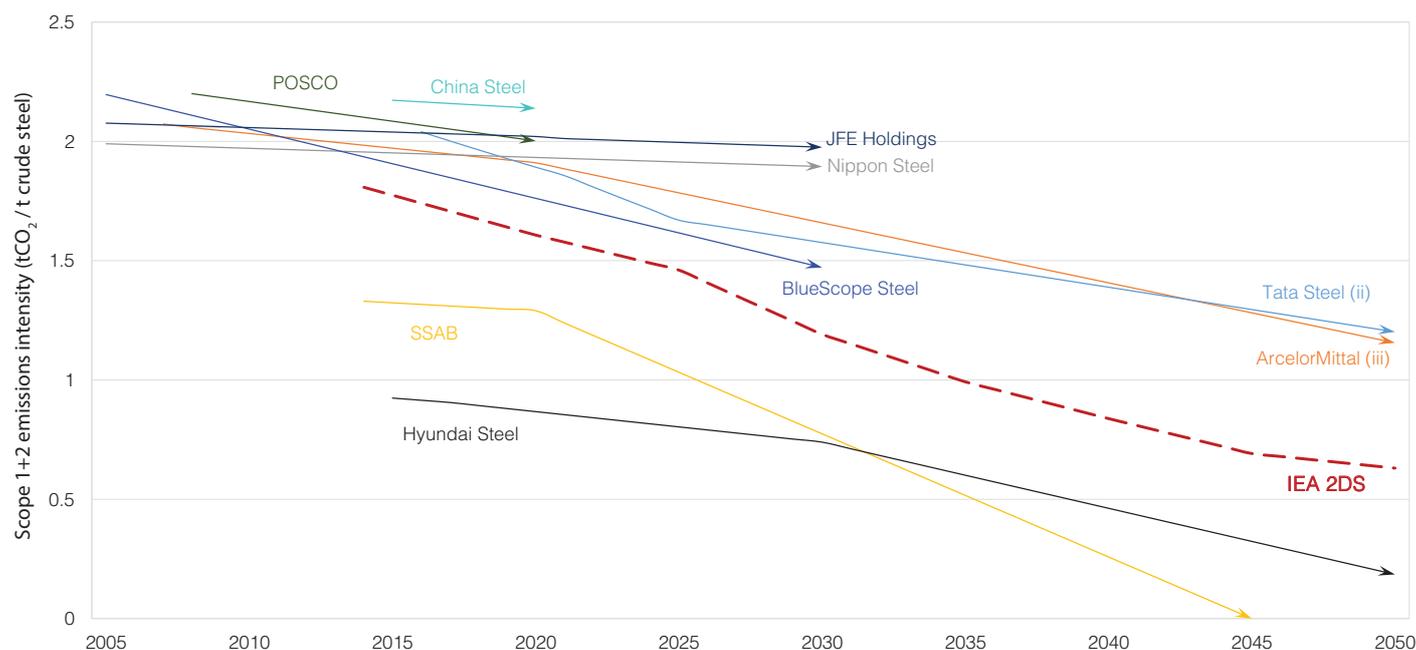
30% 10% 30% 30%

(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.

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