

Decarbonisation readiness in India's steel sector

Assessing alignment between headline
pledges and operational progress

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Key findings

There's a widening gap between the headline climate commitments made by India's major steel companies and their actual progress in building the operational, technological, and financial infrastructure required to meet their decarbonisation ambitions.

While global peers have achieved reductions, emissions intensity for most Indian steel companies has worsened over the last three years despite ambitious targets, exposing a credibility gap between stated commitments and actual performance.

Progress is slowest in financial alignment. From a sample of seven Indian steel producers and three global peers, no company scored above 43%, indicating that capital allocation and alignment decisions across the sector have not kept up with stated climate strategies.

Indian companies are showing meaningful proactiveness despite the absence of effective carbon pricing or large-scale public financial support. Nonetheless, international experience confirms that the economics of green steel will not work without coordinated government intervention, making the Green Steel Mission and targeted fiscal instruments essential to converting corporate intent into execution.

With a looming spike in blast furnace capacity due for relining before 2030, and over two-thirds of planned additions employing conventional, emissions-intensive technology, every year of deferred action deepens carbon lock-in and narrows the window for cost-effective technology substitution.



Executive summary

India will shape the future of global steel emissions more than any other nation. It is the world's second-largest steel producer, with capacity projected to reach 300 million tonnes (Mt) by 2030.¹ Yet a fundamental question remains: are Indian steel companies genuinely prepared for a low-carbon transition, or do their climate commitments mask a widening gap between ambition and action?

This report evaluates the decarbonisation readiness of seven major Indian steel producers against three global peers, using a structured framework that assesses the connection between stated targets to examine strategic planning, operational capabilities, and financial alignment. The Indian companies include JSW Steel, Tata Steel, Steel Authority of India Limited (SAIL), Jindal Steel, Rashtriya Ispat Nigam Limited (RINL), Jindal Stainless Limited, and Godawari Power and Ispat Limited (GPIL), while the global companies are ArcelorMittal, POSCO, and Nippon Steel. Drawing on established methodologies and frameworks, we have assessed companies across three layers:

- **Strategic foundation:** Climate target setting and ambition; and scenario planning and risk assessment.
- **Implementation readiness:** Technology transition planning and implementation readiness; and financial planning and investment strategy.
- **Credibility validation:** Historical performance and execution track records.

This assessment is not a call for expanded transition planning disclosure. For sectors like steel, disclosure frameworks — however refined — cannot substitute for government interventions, enabling policies, and market structures required to make low-carbon production commercially viable. Commercial financial institutions do not yet assign significant weight to climate disclosures that lack a material impact on near-term financial metrics, and a decade of proliferating disclosure initiatives has not translated into commensurate emissions reductions. The indicators examined here focus specifically on operational and financial readiness that is genuinely material to decarbonisation, not reporting comprehensiveness.

The findings indicate that climate ambition has outpaced implementation. Five of seven Indian companies assessed have adopted Paris Agreement-aligned net-zero targets for 2050, two decades ahead of India's national commitment. On climate target setting and ambition, most score above 70%. This convergence reflects the growing recognition that decarbonisation has become strategically essential. But setting targets is not the same as preparing to meet them.

The gap becomes visible in scenario planning and risk assessment. While most Indian companies score well on target setting, few have shown any evidence that they possess the analytical infrastructure to stress-test these commitments against different future scenarios. Only Tata Steel, JSW Steel, Jindal Stainless, and Jindal Steel have undertaken any form of scenario analysis, and

¹ Press Information Bureau (PIB). [India Focussing on 300 Million Ton Annual Steel Production by 2030](#). 16 February 2023.

even their disclosure of results remains limited. Global peers demonstrate more systematic scenario integration, though this remains a developmental area across the industry.

Implementation readiness reveals further gaps, though not for India alone. Global peers score between 60% and 73% on technology transition planning and implementation readiness, supported by quantified abatement levers, asset-level blast furnace (BF) relining schedules, and contingency plans for technology delays. JSW Steel performs closest to global peers among Indian companies, with relatively stronger technology planning and comparably financial alignment, reflecting stronger planning frameworks than most Indian companies. However, the parameter captures the rigour of stated plans, not the status of their execution. On that front, a gap is emerging: Several high-profile European and North American projects have been cancelled or delayed due to prohibitive energy costs and inadequate hydrogen supply, indicating that even well-articulated transition plans face significant delivery risk.

The roughly USD24 billion (INR2.25 lakh crore)² investments globally in steel decarbonisation to date have been overwhelmingly enabled by public capital, underscoring a basic reality: The economics of green steel do not yet work without substantial public support, regardless of geography.

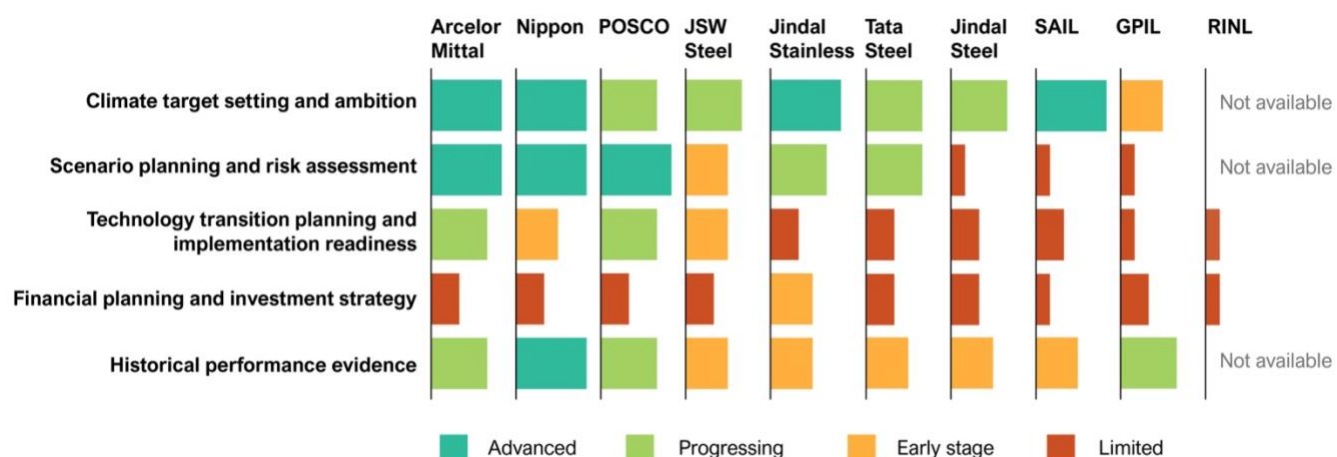
Within India, JSW Steel and Tata Steel lead among domestic producers on technology planning, with pilot projects covering about 18% and 20% of their respective projected capacity. But gaps persist across the sector in quantification of targets for each transition lever across planning horizons. According to the Transition Plan Taskforce (TPT), transition levers are broadly defined as the range of approaches available to an organisation to facilitate its climate transition, including capital investment, skills and training, and industry or government engagement.³ Gaps also remain in relining schedule disclosure and contingency planning. Steel Authority of India Limited (SAIL), Godawari Power and Ispat Limited (GPIL), and Rashtriya Ispat Nigam Limited (RINL) show limited progress in translating climate commitments into operational planning.

Financial alignment is the weakest dimension across the entire sample, including global peers. No company scores above 43% for financial allocation, indicating that capital allocation decisions have not yet caught up with stated climate strategies. This reflects the underlying commercial reality: With green steel carrying a cost premium of approximately USD210 per tonne (INR19,740 per tonne) over conventional production, and with technology pathways still maturing, capital competes against conventional expansion projects that offer more certain near-term returns. This is a sector-wide challenge globally, not an India-specific one.

² IEEFA. [The critical role of public capital in financing India's green steel development](#). 27 November 2025. Page 4.

³ Transition Plan Taskforce. [Transition planning cycle](#). April 2024. Page 14.

Figure E1: Steel companies' decarbonisation readiness score



Source: IEEFA analysis

What deserves recognition is that Indian steel companies are showing meaningful proactiveness on decarbonisation even in the absence of effective carbon pricing signals or large-scale public financial support. Steel-specific intensity targets under India's Carbon Credit Trading Scheme (CCTS) are yet to be defined, the Green Steel Mission remains in formulation, and Indian producers receive a fraction of the fiscal incentives available to their global counterparts. Against that backdrop, the fact that most private Indian producers have set Paris-aligned targets, begun identifying technology pathways and, in some cases, initiated pilot projects reflect genuine strategic intent. The challenge is converting that intent into execution at the pace and scale the transition demands.

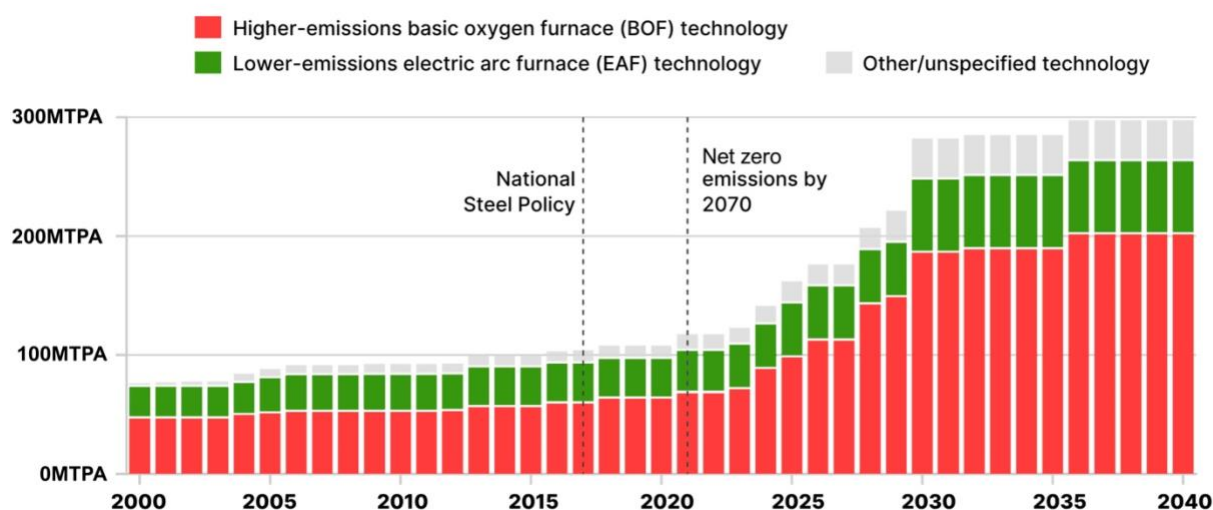
Bridging this gap will require coordinated government action. International experience demonstrates that carbon pricing alone cannot drive the steel transition. Even in Europe's relatively mature carbon market, green steel projects require public support far beyond what the carbon price signal provides. For India, where the policy architecture is still being assembled, targeted public capital deployment through instruments such as credit guarantee facilities, competitive contracts for difference, and green public procurement mandates will be needed to shift the risk-reward calculus for producers and unlock private investment at scale.

The indicators developed in this assessment provide a basis for distinguishing those companies whose transition strategies are operationally grounded from those whose commitments remain largely aspirational. What separates leaders from laggards across both Indian and global producers is not the ambition of their targets but the depth of operational and financial planning behind those targets. On that measure, the sector as a whole — in India and globally — has considerable ground to cover.

1. Introduction

India's steel sector stands at a crossroads, nearing an inflection point that carries material consequences for investors, policymakers, and the global climate trajectory. The country is the world's second-largest steel producer, with crude steel output reaching approximately 152 million tonnes (Mt) in financial year (FY) 2025 and installed capacity surpassing 200Mt.⁴ Whereas steel demand has plateaued or is declining in China, Japan, or the European Union (EU), India is on a steep growth curve. The National Steel Policy targets 300Mt of capacity by 2030, while Global Energy Monitor (GEM) expects this to be achieved by 2040.^{5,6} This makes India the single most consequential country for the future of global steel sector emissions.

Figure 1: India's projected crude steel capacity by 2040



Note: MTPA = million tonnes per annum; chart does not include an additional 82MTPA crude steel capacity in development as planned start dates are unknown.

Source: Global Energy Monitor (GEM)⁷

Yet India's steel sector is also among the most carbon-intensive in the world, and accounts for 10% to 12% of the country's total emissions.⁸ With India's revised National Determined Contributions (NDCs) goals of 47% emission intensity reduction by 2035, emission reduction within the sector will be crucial.⁹ At an average of 2.54 tonnes of carbon dioxide (tCO₂) per tonne of crude steel (tcs),

⁴ PIB. [Steel production capacities](#). 29 July 2025.

⁵ Ministry of Steel. [National Steel Policy](#). 9 May 2017.

⁶ Global Energy Monitor (GEM). [Why India's 'build now, decarbonize later' approach to achieving a net-zero steel industry will fail](#). December 2024.

⁷ GEM. [Why India's 'build now, decarbonize later' approach to achieving a net-zero steel industry will fail](#). December 2024.

⁸ Ministry of Steel. [Greening the Steel Sector in India. Roadmap and Action Plan](#). September 2024. Page 1.

⁹ PIB. [India commits to reduce Emissions Intensity of its GDP by 47 percent by 2035 from 2005 level](#). March 2026.

India's emissions intensity is roughly 38% higher than the global average of 1.85 tCO₂/tcs, accounting for approximately 240Mt of CO₂ emissions annually.^{10,11} With 69% of new capacity currently planned via the conventional blast furnace-basic oxygen furnace (BF-BOF) route and 72% of existing BF capacity commissioned in the last 20 years, investment decisions made in the next 5-10 years will lock in emissions pathways well past mid-century, creating potential stranded asset exposure estimated at USD124-187 billion (INR11.66- 17.58 lakh crore).¹²

This tension between growth ambition and emissions lock-in is not merely an environmental concern, it is increasingly becoming a material, commercial and financial risk. India's steel sector faces a convergence of trade barriers, capital constraints, and evolving domestic policy, making decarbonisation preparedness a progressively consequential factor in a company's valuation and strategic positioning. Yet the structural barriers to decarbonisation in India are distinct from those in other major steel-producing regions, and understanding these barriers is essential to assessing whether company-level strategies are realistic or aspirational.

Hence, the central question this report addresses is whether India's major steel companies are genuinely prepared for a low-carbon future, or whether stated climate ambitions mask a widening gap between commitments and operational reality.

1.1. Structural challenges to India's steel decarbonisation

India's elevated emissions intensity is not simply a matter of operational inefficiency. It is rooted in the country's resource endowment, the particular configuration of its steel production system, and a policy framework that, while evolving, remains incomplete. Understanding these structural drivers matters because they determine both the scale of what decarbonisation requires in India and whether company-level strategies to achieve it are realistic.

1.1.1. Coal dependence across the production spectrum

India's steelmaking system relies heavily on coal across virtually all production routes. BF-BOF accounts for a significant share of crude steel production, with induction furnaces (IFs) and electric arc furnaces (EAF) comprising the remainder (refer Figure 2). Critically, India is the world's largest producer of sponge iron, and in FY2024, coal-based processes accounted for 81% of total sponge iron output.¹³ Given the government's support in categorising coking coal as a critical mineral, this output is expected to grow, and a large share of India's capacities will remain coal-based.¹⁴

¹⁰ Ministry of Steel. [Greening the Steel Sector in India. Roadmap and Action Plan](#). September 2024. Page 1.

¹¹ GEM. [Why India's 'build now, decarbonize later' approach to achieving a net-zero steel industry will fail](#). December 2024.

¹² GEM. [Why India's 'build now, decarbonize later' approach to achieving a net-zero steel industry will fail](#). December 2024.

¹³ Ministry of Steel. [Annual Report 2024-25](#). April 2025. Page 15.

¹⁴ PIB. [Government Notifies Coking Coal as Critical & Strategic Mineral under MMDR Act, 1957](#). 29 January 2026.

relining remains the economically rational choice for most producers. An estimated 43 million tonnes per annum (MTPA) of BF capacity is due for relining before 2030, and each reline will lock in emissions from coal-based capacities into the 2040s.²¹

The new-build pipeline (section 6.1) compounds this carbon lock-in risk. IEEFA's analysis of GEM's Global Iron and Steel Tracker provides that the Indian companies under analysis have 258MTPA of capacity in development, of which BF-BOF accounts for 69% and EAF accounts only for 13% of planned capacity.²² Our analysis further estimates cumulative carbon emissions from the operating, announced, and under-construction capacities of the seven Indian steel majors assessed under this report to be 33.7 gigatonnes (Gt) through 2070, assuming one conventional reline cycle (methodology and company-level results are in Annexure 6.1). Unlike in Europe or Japan — where ageing fleets create near-term opportunities to transition to low-emission technologies — India's fleet remains relatively young. As a result, it is unlikely to be replaced within a timeframe consistent with deep decarbonisation, unless a strong commercial case emerges for such a transition.

1.1.3. An evolving but incomplete policy framework

India has committed to economy-wide net zero emissions by 2070, two decades later than the 2050 timeline that underpins the Paris Agreement's 1.5C goal. As of now there is no binding sector-specific emissions cap or decarbonisation trajectory for steel. That said, the policy architecture has been advancing. In December 2024, the Ministry of Steel released the taxonomy for green steel, establishing a star-rating system tied to emissions intensity. The highest rating, "5-Star Green Steel", requires emissions below 1.6tCO₂ per tonne of finished steel, a threshold that effectively excludes coal-based direct reduced iron (DRI) and inefficient BF-BOF production.²³ The government is working on a proposal for a national mission for sustainable steel with an outlay of INR5,000 crore (USD532 million) to encourage the use of clean technologies, alternative materials, and pilot projects, primarily among secondary steel producers.²⁴ The Carbon Credit Trading Scheme (CCTS) is expected to set emissions intensity targets for steel by mid-2026. These are meaningful directional signals, but in the absence of binding sectoral targets, the pace and depth of transition still rest largely on company-level decisions.

1.2. Why this assessment matters now

The steel sector globally emits an estimated 3.7Gt to 4.1Gt of CO₂-equivalent per year, with 72% of production still via the coal-dependent BF-BOF route.²⁵ Paris-aligned 1.5C pathways require emission reductions of over 95% by 2050, even as global demand for steel is projected to grow from

²¹ GEM. [Why India's 'build now, decarbonize later' approach to achieving a net-zero steel industry will fail](#). December 2024.

²² GEM. [Global Iron and Steel Tracker](#). July 2025.

²³ PIB. [India's Green Steel Taxonomy](#). 12 December 2024.

²⁴ The Hindu. [Govt plans ₹5,000 cr scheme to promote decarbonisation in steel industry: Steel Secretary](#). 17 September 2025

²⁵ Intergovernmental Panel on Climate Change (IPCC), ed. Industry. In: [Climate Change 2022 - Mitigation of Climate Change: Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change](#). Cambridge University Press; 2023:1161-1244.

1.9Gt in 2023 to roughly 2.5Gt by 2050.²⁶ The sector must cut emissions radically while simultaneously producing more steel.

Yet the corporate response is not on track. An academic study examining the world's 60 largest steel companies — which together account for more than 60% of global production — found that, as of mid-2022, only half of them (30 companies) had set any greenhouse gas (GHG) reduction target.²⁷ Of these, only 18 had committed to net zero, and 14 of those with targets had published no plans to achieve them. Even under a best-case scenario in which all existing targets are fully met, the study estimated global steel emissions would decline by only 38% to 53% by 2050, reaching roughly half the intensity reduction that 1.5C requires. The global bar, in other words, is already too low.

For India, the question is not only whether its steel companies are keeping pace with this insufficient global benchmark, but whether they are prepared for the emerging trade and regulatory pressures that are beginning to make decarbonisation preparedness commercially consequential. The structural conditions described in Section 1.1 have been present for some time. What has changed is the arrival of trade barriers with immediate cost implications and the emerging domestic policy architecture that, while still incomplete, signals a directional shift toward carbon pricing and low-carbon procurement standards.

This assessment is timely because several converging forces are making decarbonisation preparedness an increasingly material factor in company valuation and strategic positioning.

First, trade exposure is becoming a direct cost event. The EU absorbs approximately 45% of India's steel exports (3.71Mt in 2024).²⁸ The EU's Carbon Border Adjustment Mechanism (CBAM) entered its compliance phase in January 2026, meaning there will be a carbon intensity gap roughly translating to an additional cost of EUR180-250 per tonne (INR19,791-27,487 per tonne) of Indian steel exported to the EU.²⁹ Steel exports to the EU are already down by 31.4% for January-August 2025 period compared with the same period in 2024, showing the strain imposed by CBAM requirements.³⁰ Carbon pricing is set to make Indian steel less competitive than others. This is not a future scenario but an imminent cost event for export-oriented producers.

Second, India's CCTS is expected to set steel-specific intensity targets by mid-2026, introducing carbon costs that high-emission producers will struggle to pass on to consumers in a competitive domestic market.

²⁶ Reclaim Finance. [Decarbonizing the Steel Sector](#). March 2023. Page 11.

²⁷ Energy and Climate Change. *de Villafranca Casas et al.* [Climate targets by major steel companies: an assessment of collective ambition and planned emission reduction measures](#). December 2024. Volume 5 (100120).

²⁸ Metalbook. [Impact of India-EU FTA on Indian steel export growth](#). 14 October 2025.

²⁹ BDB. [Green Steel & Decarbonization – Impact of CBAM on Indian Exporters](#). 31 December 2025.

³⁰ World Trade Scanner. [EU Slashes Steel Import Quota by 47% and Doubles Tariffs on Indian Exports from 2026 Under CBAM](#). October 2025.

Third, the capital required for transition is enormous and front-loaded. Decarbonising India's existing steel plants alone is estimated to require approximately USD283 billion (INR26.6 lakh crore).³¹ While domestic capital markets have not yet systematically integrated transition risk into lending or investment decisions, international investors and development finance institutions are increasingly scrutinising emissions intensity and transition planning in their India portfolios. International experience underscores why mobilising this capital is so challenging: Even in markets with mature carbon pricing, the economics of green steel do not yet work without substantial public support. Public subsidies per tonne of CO₂ abated in announced green steel projects range from USD110 (INR10,340) to USD1,168 (INR1.10 lakh) globally. This financing reality shapes the context for assessing Indian companies, which are operating in a policy environment where carbon pricing has yet to be experienced and fiscal support remains a fraction of what European and North American projects receive.³²

Fourth, companies that have not begun integrating decarbonisation into capital allocation face a compounding problem: The longer the delay, the higher the eventual cost and greater the stranded asset risk.

As this report demonstrates, some Indian producers have begun building the strategic, technological, and financial infrastructure for decarbonisation. Others, including major public sector undertakings, show minimal evidence of substantive transition planning. For investors, lenders, and offtakers, this divergence is the core analytical challenge: distinguishing companies with credible, operationally grounded decarbonisation strategies, from those whose commitments remain largely aspirational.

The rest of this report is structured as follows. Section 2 briefly discusses the assessment framework: A five-parameter evaluation across three analytical layers (strategic foundation, implementation readiness, and performance validation) applied to seven Indian steel companies and three global peers. Section 3 explains how the companies were selected and what data sources were used. Section 4 presents the results, identifying which companies have built substantive transition capabilities and which remain largely unprepared. Section 5 provides our conclusion.

2. Steel sector decarbonisation assessment framework

2.1. Overview of assessment framework

The assessment framework synthesises insights from established climate finance evaluation methodologies and corporate decarbonisation assessment standards. It draws on a range of analytical approaches: The Climate Action 100+ Net Zero Company Benchmark (CA100+)³³; the

³¹ Council on Energy, Environment and Water. [Evaluating Net-zero for the Indian Steel Industry](#). 12 October 2023.

³² IEEFA. [The critical role of public capital in financing India's green steel development](#). 27 November 2025. Page 3.

³³ Climate Action: [Climate Action 100+ Net Zero Company Benchmark 2.0](#). March 2023

Glasgow Financial Alliance for Net Zero (GFANZ) Transition Plan Framework³⁴; the Transition Plan Taskforce (TPT) Framework³⁵; the Assessing low-Carbon Transition Initiative³⁶; the Transition Pathway Initiative³⁷; the CDP (formerly known as the Carbon Disclosure Project) Climate Change Questionnaire³⁸; the Science Based Targets Initiative's (SBTi) steel sector guidance³⁹; the Climate Bonds Initiative's classification system for corporate transitions⁴⁰; and the United Nations High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities⁴¹. While no single framework adequately captures the full range of capabilities required for credible steel sector decarbonisation, together these sources provide a comprehensive basis for evaluating decarbonisation readiness.

The framework adapts these approaches to address the specific characteristics of steel production through three modifications. First, it emphasises locked-in emissions assessment based on asset-level disclosure, reflecting the fact that BF infrastructure with 40-to-50-year operational lives creates carbon lock-in dynamics with no direct parallel in most other sectors. Second, it assesses technology pathway specificity across multiple competing decarbonisation routes available to steel producers — hydrogen-based DRI, scrap-based EAF expansion, and carbon capture — each with different cost structures, maturity levels, and infrastructure dependencies. Third, it evaluates coherence between technology plans and financial commitments, recognising that in a capital-intensive sector, the credibility of a decarbonisation strategy ultimately rests on whether it is reflected in investment decisions.

The assessment relies exclusively on publicly available information: annual and sustainability reports; business responsibility and sustainability reporting (BRSR) filings; Task Force on Climate-related Financial Disclosures (TCFD); CDP responses; investor presentations; and official company communications, supplemented by third-party databases such as GEM and Bloomberg New Energy Finance (BNEF) for cross-verification.

Two clarifications on scope are necessary. First, this methodology assesses the completeness and integration of disclosed strategies rather than modelling the likelihood that companies will achieve their stated targets. The focus is on planning sophistication that companies can directly control, not predictions about uncertain technological, policy and market developments. The indicators examined here focus on operational and financial readiness genuinely material to decarbonisation, rather than on reporting comprehensiveness. Second, this assessment is not a call for expanded disclosure frameworks. For a slow-to-decarbonise sector like steel, disclosure alone cannot bridge the execution gap that only coordinated government action can address. Commercial financial institutions do not yet assign significant weight to climate disclosures lacking material impact on

³⁴ GFANZ. [Real-economy transition plans](#). September 2022

³⁵ TPT. [Disclosure framework](#). October 2023

³⁶ ACT. [Assessing low carbon transition](#). December 2023

³⁷ TPI. [TPI State of Transition Report 2024](#).

³⁸ CDP. [CDP Full Corporate Questionnaire](#). May 2024

³⁹ SBTi. [Steel science-based target-setting guidance](#). July 2023

⁴⁰ CBI. [Navigating corporate transitions](#). May 2024

⁴¹ UN. [Net zero commitments by businesses financial institutions cities and regions](#).

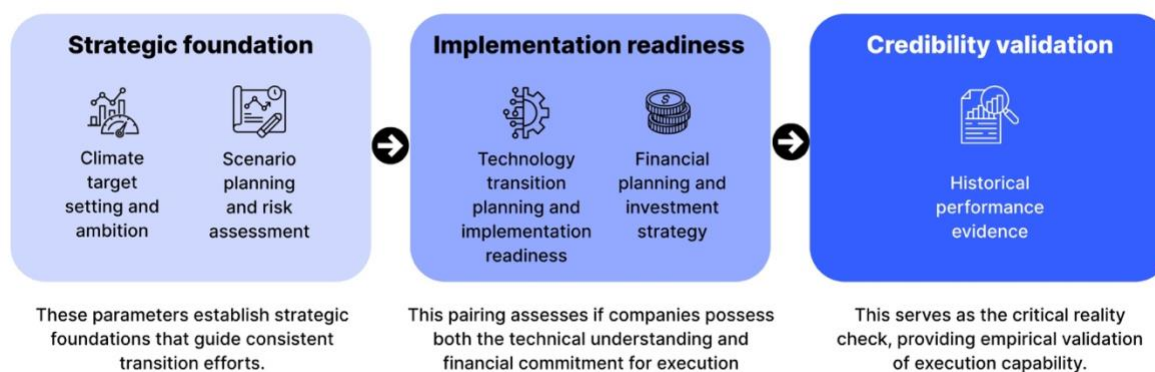
near-term financial metrics, and a decade of proliferating disclosure initiatives has not translated into commensurate emissions reductions.



This framework assesses operational and financial readiness genuinely material to decarbonisation — not reporting comprehensiveness — and is designed to test whether technology plans and capital allocation decisions are coherent with stated climate targets.

Now, we provide an overview of the framework in the next subsection. A detailed description of the assessment framework including indicator definitions, scoring methodologies, and weighting rationale are presented in Annexure 6.2. The framework organises five core parameters across three interconnected layers (Figure 3), each capturing essential components of steel sector decarbonisation planning:

Figure 3: Architecture for steel sector decarbonisation assessment



Source: IEEFA analysis.

2.1.1. Strategic foundation layer

The strategic foundation layer evaluates whether companies have established credible and science-based decarbonisation targets and adaptive planning capabilities. This layer comprises two parameters: climate target setting and ambition; and scenario planning and risk assessment.

Climate target setting and ambition parameter evaluates the quality and comprehensiveness of decarbonisation commitments across seven indicators. This parameter examines whether companies have established net-zero targets with Paris-aligned timelines, defined baseline years for measurement, and specified interim milestones appropriate for the steel sector's long asset

lifecycles. Given the direct operational control that steelmakers exercise over their production processes, the assessment places particular emphasis on Scope 1 and Scope 2 emissions coverage, while also evaluating Scope 3 coverage and the identification of external dependencies, such as renewable energy availability, green hydrogen supply, and scrap market development, on which decarbonisation targets are contingent.

Scenario planning and risk assessment parameter evaluates the sophistication and integration of climate scenario analysis across six indicators. The assessment examines whether companies utilise credible, globally recognised climate scenarios, including Paris-aligned pathways; whether they disclose the analytical framework, organisational boundaries or constraints, and quantitative or qualitative results of their scenario analysis; and whether scenario insights are integrated into strategic decision-making rather than treated as standalone disclosure exercises. This parameter also assesses whether companies monitor cross-sectoral developments in power, transport, and hydrogen that materially affect steel decarbonisation economics.

Together, these two parameters establish whether companies have both set comprehensive decarbonisation targets and conducted rigorous analysis to validate the robustness of these targets under different market, policy, and technology scenarios.

2.1.2. Implementation readiness layer

This layer assesses whether companies have translated strategic intent into operational capabilities and financial commitments that are sufficient to deliver emissions reductions in practice. The layer comprises two parameters — technology transition planning and implementation readiness; and financial planning and investment strategy — and carries the highest combined weighting in the overall framework. This reflects the practical reality that in capital-intensive sectors, operational capability ultimately determines whether decarbonisation strategies are implementable.

Technology transition planning and implementation readiness parameter carries the highest individual weightage among all five parameters, reflecting its central role in determining whether emissions reductions can be delivered operationally. This parameter assesses the credibility of technology pathways across 11 indicators, covering the identification and quantification of transition levers, such as the transition from BF to hydrogen-based DRI, and scrap-based EAF expansion; disclosure of production capacity by technology route; BF relining schedules that reveal windows for technology switching; deployment of low-carbon steel pilot projects; assessment of locked-in emissions from existing and planned infrastructure; and contingency planning for technology development delays. The assessment distinguishes companies that have quantitatively linked specific transition levers to emission reduction outcomes, from those that rely on broad or generic narratives.

Financial planning and investment strategy parameter evaluates whether stated decarbonisation commitments are reflected in actual investment decisions across eight indicators. The assessment examines the balance of capital expenditure between low-carbon technology investments and

conventional carbon-intensive assets, the use of internal carbon pricing (ICP) mechanisms in investment appraisal, the development of revenue strategies and targets for low-carbon steel products, and research and development (R&D) spending specifically directed toward decarbonisation technologies. This parameter captures whether financial decisions support or contradict stated decarbonisation pathways, recognising that detailed technology plans without integrated financing are at risk of remaining unfunded ambitions.

The two parameters in this layer are assessed as complementary: Technology planning without corresponding financial commitment signals aspirational intent, while financial disclosures without corresponding technology progress can indicate maturity in reporting rather than in execution.

2.1.3. Credibility validation layer

This layer provides empirical evidence of execution capability, serving as the reality check that distinguishes companies with demonstrated track records from those whose commitments remain largely untested. This layer comprises a single parameter. Historical performance evidence examines whether companies can demonstrate measurable progress toward decarbonisation through four indicators. The assessment evaluates historical emissions intensity reduction trajectories benchmarked against sectoral performance; The depth and quality of participation in recognised climate initiatives such as CDP, SBTi, and Responsible Steel; evidence of active engagement with policymakers and supply chain partners; and systematic integration of evolving policy frameworks into strategic planning. This parameter reflects the view that historical outcomes offer insight into organisational capability, consistency, and governance quality that forward-looking disclosures alone cannot provide.

This framework is applied to evaluate ten steel companies, discussed in section 3, representing diverse operational scales and geographical contexts, with detailed assessment results and comparative analysis presented in Section 4.

2.2. Stakeholder relevance and use cases

Corporate decarbonisation strategies in the steel sector are increasingly central to investment decisions, regulatory design, and industry positioning. Existing assessment frameworks are often designed for global benchmarking or target validation, rather than comparative evaluation of planning depth and operational readiness across a specific national context. This assessment addresses that gap, serving distinct analytical needs across multiple stakeholder groups that face a common underlying challenge: Distinguishing substantive decarbonisation planning from aspirational commitments.

For investors and financial institutions, assessing the decarbonisation readiness of steel companies presents particular analytical difficulties. Unlike power generation, where technology pathways are relatively well defined, steel involves multiple competing technology routes, asset lifecycles of 40 to 50 years, and capital requirements sensitive to local resource endowments and

policy conditions. Most investors lack the sector-specific technical expertise to evaluate whether stated pathways are operationally feasible or financially viable. This framework translates that complexity into comparable indicators, enabling structured peer comparison and engagement prioritisation based on strategic readiness rather than headline commitments. It also surfaces exposure to carbon lock-in and stranded asset risks, particularly relevant given the scale of new BF capacity under construction in India. For instance, indicators on BF relining schedules, locked-in emissions trajectories, and the share of low-carbon pilot capacity relative to planned expansions allow investors to identify companies where stated net-zero timelines are misaligned with asset-level investment decisions, signalling elevated stranded asset risk or future capital expenditure requirements that may not be reflected in current valuations.

For policymakers and regulators, the assessment offers evidence on industry preparedness that can inform targeted intervention. India's policy architecture for steel decarbonisation is evolving through the Green Steel Taxonomy, the CCTS, and the Green Steel Mission. But effective policy design requires an understanding of where binding constraints on implementation actually lie. This assessment surfaces where those constraints are most acute. For example, the limited deployment of low-carbon pilot projects outside a few leading producers suggests that policy support for de-risking early-stage technology investments may be more impactful than target-setting mandates. Meanwhile the concentration of BF capacity due for relining in the near term highlights a narrow window in which fiscal incentives or concessional finance could shift technology choices at scale.



This framework translates the technical complexity of steel decarbonisation into comparable, indicator-level assessments that enable investors to surface asset-level misalignment, policymakers to target binding constraints, and companies to benchmark operational readiness against domestic and global peers.

For steel companies, the framework enables peer benchmarking against domestic competitors and global leaders. Companies can identify dimensions where their strategic positioning lags, whether in technology pathway credibility, capital allocation toward low-carbon capacity, or progress on pilot project deployment. This is particularly relevant as Indian steelmakers compete for international offtake contracts, green procurement mandates, and sustainability-linked finance that increasingly condition market access on demonstrated execution capability rather than stated ambition. For instance, a company with Paris-aligned targets but minimal pilot capacity relative to planned expansions can benchmark against peers to understand where operational investments would most strengthen its positioning for emerging low-carbon steel markets.

For researchers and civil society, the methodology provides a transparent, replicable basis for tracking sectoral progress. The indicator structure and scoring criteria disclosed in Annexure 6.2 enable independent verification and cross-sector comparison.

3. Company selection and data sources

3.1. Selection of Indian companies

This assessment covers seven Indian steel producers, collectively accounting for approximately 54% of India's crude steel production in FY2025. The selection spans large integrated steel producers, public sector undertakings, and mid-sized producers operating across BF-BOF, DRI, and EAF-based routes, to capture diversity across ownership structures, production scales, and technology configurations.

Three global steel producers were selected as comparators to benchmark disclosure depth, technology deployment, and decarbonisation planning maturity.

Table 1 shows the list of companies assessed in this report.

Table 1: List of companies

Panel A: Indian companies		
Company	Production capacity FY2025 (Mt)	Share of India's total production
JSW Steel	26.5	17.4%
Tata Steel	20.7	13.6%
Steel Authority of India Limited (SAIL)	19.2	12.6%
Jindal Steel	8.1	5.3%
Rashtriya Ispat Nigam Limited (RINL) ⁴²	4.4	2.9%
Jindal Stainless Limited	2.1	1.4%
Godawari Power and Ispat Limited (GPIL)	0.6	0.4%
Total steel production of selected companies	81.6	
Total steel production by Indian steel sector ⁴³	152.2	
Percentage of production covered	54%	

⁴² Due to the non-availability of RINL's FY2025 financial statements as of the cut-off date, statements for FY2024 have been referred.

⁴³ PIB. [India's crude steel production FY2024-2025](#). 5 August 2025.

Panel B: Global companies		
Company	Production (Mt)	Rationale for selection
ArcelorMittal (FY2024)	76.7	As one of the world's largest producers, headquartered in Europe, it operates under some of the strictest climate finance regulations globally.
POSCO (FY2025)	35	Chosen as South Korea's largest producer to represent a policy context where the government actively prioritises and regulates the shift toward green steel production.
Nippon Steel (FY2024)	34.3	A leader in technological transformation, this company represents the Japanese context, where the industry is prioritising the transition to sustainable steel manufacturing.

For Tata Steel, given it has integrated steel operations across domestic and international locations, the assessment relies on India-specific data, wherever disaggregated information was available. This approach is adopted to avoid any overestimation of performance driven by more stringent disclosure requirements in its overseas jurisdictions. For ArcelorMittal, the assessment adopts a global lens, reflecting its geographically diversified operations and reliance on consolidated group-level disclosures.

This assessment does not cover standalone small-scale EAF, induction furnace, or rerolling operations, which constitute a significant but highly fragmented segment of India's steel industry. These units face distinct decarbonisation constraints and data availability challenges that warrant separate treatment.⁴⁴

3.1.1. Key comparison dynamics for global peers:

Regional diversity: By selecting leaders from Europe, South Korea, and Japan, the assessment compares the progress of Indian firms with that of global entities operating under advanced environmental mandates.

Technological maturity: While Indian producers in this assessment operate across BF-BOF, DRI, and EAF-based production routes, global peers provide a standard for relatively high-volume technological shifts toward decarbonisation.

Policy contexts: The inclusion of these global peers highlights how domestic regulations (like those in South Korea or Europe) drive corporate transparency and transition strategies, providing a yardstick for Indian counterparts.

⁴⁴ Kalyani Steel, a secondary producer operating primarily through EAF and scrap-based routes with a reported intensity below 0.19 tCO₂/tcs, was initially considered but excluded due to limited public availability of climate-related data. Its low intensity reflects a specific configuration — high scrap content, renewable electricity, and modern melting and refining technologies — rather than a characteristic generalisable to Indian secondary steelmaking, where coal-based DRI and high grid emission factors remain prevalent.

3.2. Data sources

The assessment relies on publicly available information as its primary data sources, encompassing annual reports (including BRSR), dedicated sustainability reports, climate-related and TCFD documents (incorporated wherever available), investor presentations, press releases, and official company websites. For added reliability, third-party databases, such as BNEF and GEM have been referred for cross-verification when relevant. The reference period for Indian companies is FY2025, or the most recent and relevant information available, while global companies are evaluated based on their most recent disclosures, generally calendar year 2024.

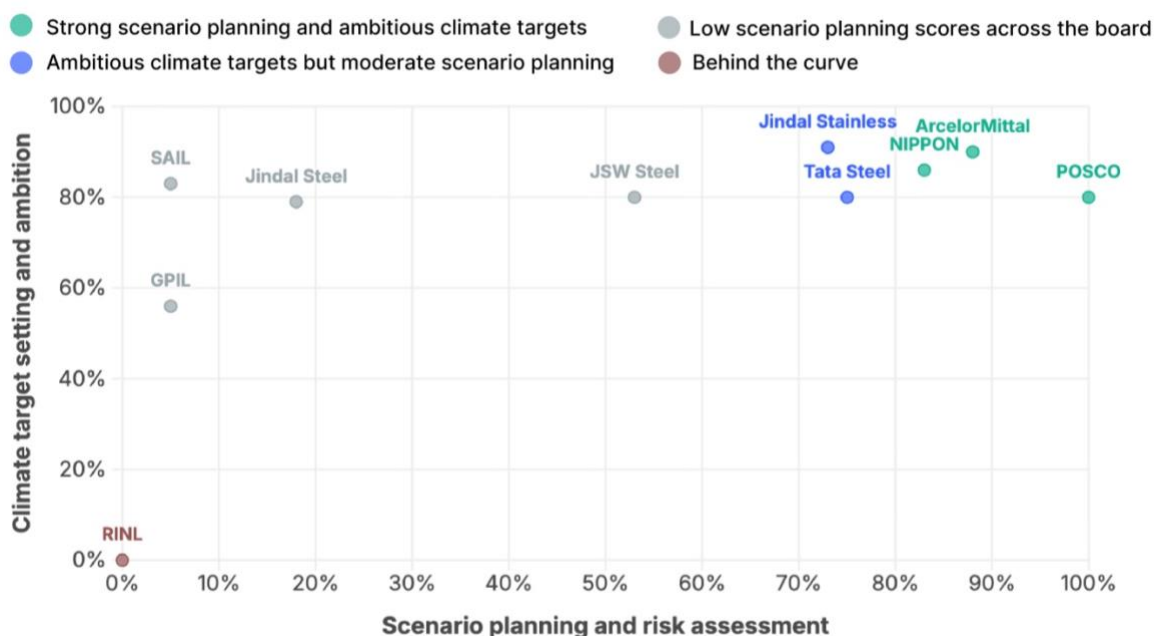
4. Assessment results discussion

The results are organised across the three analytical layers introduced in Section 2: strategic foundation, implementation readiness, and credibility validation. Each layer is examined in turn.

4.1. The planning gap: Net-zero targets without scenario analysis

The strategic foundation assessment reveals a critical disconnect in India's steel sector transition readiness. Figure 4 shows that, while most companies have adopted Paris-aligned climate commitments (x-axis), the majority show no evidence of the analytical infrastructure needed to stress-test those commitments (y-axis) against different future scenarios.

Figure 4: Strategic foundation assessment — climate target setting and ambition vs scenario planning and risk assessment



Source: IEEFA analysis



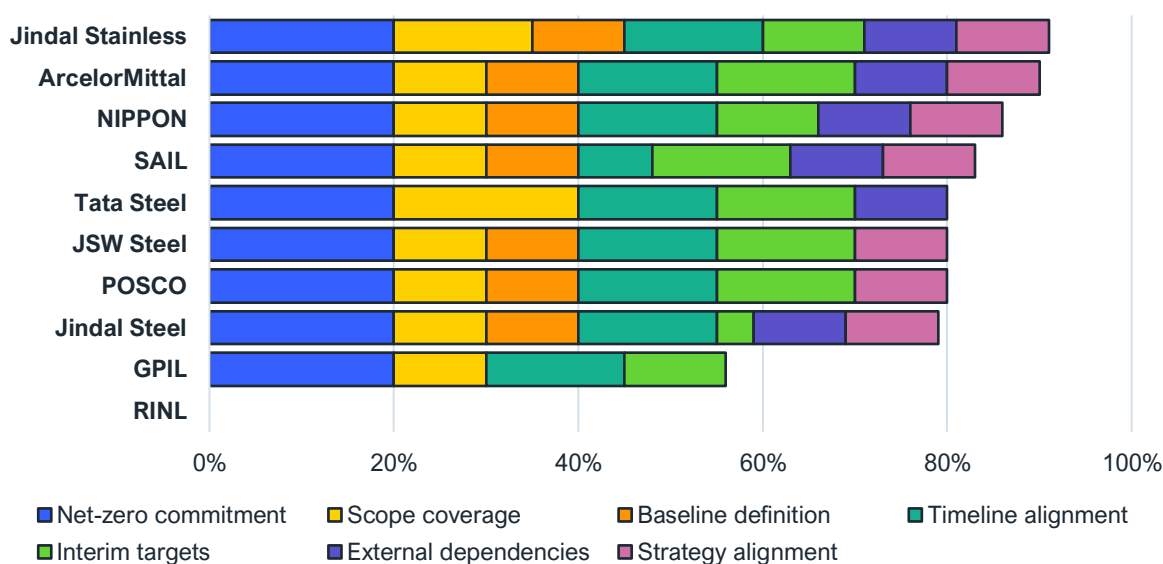
Five out of seven Indian companies score more than 70% for their climate target setting and ambition parameter, most of them have a net-zero target 20 years ahead of India's broad timelines. However, their scenario planning and risk assessment capabilities tell a different story. Most provide no evidence of stress-testing these targets against different future scenarios, raising questions about whether stated ambitions reflect genuine strategic planning or aspirational positioning.

4.1.1. Climate target setting and ambition: Convergence around Paris-aligned goal

The climate target assessment shows significant convergence around Paris-aligned commitments. Of the seven companies, five have committed to net zero by 2050, with only SAIL adopting a 2070 timeline aligned with India's national commitment rather than the Paris Agreement.

As of the cut-off date for this assessment, RINL had not published its FY2025 annual report, and the company did not mention its net-zero target in its FY2024 annual report. Therefore, no score has been assigned to the company. However, in a December 2025 press release, RINL indicated that 2047 is its net-zero target year.⁴⁵

Figure 5: Assessment score for climate target setting and ambition



Source: IEEFA analysis

⁴⁵ RINL. [Celebration of National Energy Conservation Fortnight at RINL](#). 15 December 2025.

It is essential to view the results of these indicators (Figure 5), given the uneven disclosure quality across companies. While most companies have disclosed fairly, data limitation is evident among public sector companies and smaller producers, constraining the robustness and comparability of the assessment under this parameter.

4.1.1.1. Scope coverage is the most prevalent gap

Tata Steel is the only company to demonstrate best practices across all emissions scopes (i.e. Scope 1, Scope 2, and Scope 3), covering both absolute and intensity-based metrics. The remaining Indian companies and global peers are primarily focused on Scope 1 and Scope 2 emissions, with limited or partial coverage of Scope 3 emissions, thereby limiting the overall scope of their net-zero targets. For a sector where upstream coking coal and downstream steel processing together constitute a substantial share of lifecycle emissions, Scope 3 exclusion understates the scale of the transition challenge.



Tata Steel is the only company in the assessment to cover Scope 1, 2, and 3 emissions comprehensively. The remaining Indian producers and global peers leave a significant share of value-chain emissions outside the boundary of their net-zero commitments.

4.1.1.2. Interim targets are the second gap

A 2050 net-zero target without interim milestones for 2030 or 2035 gives investors and regulators no near-term anchor against which to measure progress. All the companies under assessment have set both near-term and long-term emission reduction targets, except Jindal Steel and RINL. While there is no information available for RINL, Jindal Steel's path to net zero is unclear as it has outlined only long-term targets without interim milestones.

4.1.1.3. External dependency identification is a partial positive

ArcelorMittal, Nippon Steel, Tata Steel, Jindal Stainless, Jindal Steel, and SAIL have acknowledged the external conditions on which their decarbonisation depends: Factors such as renewable energy availability, green hydrogen supply chains, access to high-grade iron ore, and supportive policy frameworks. The absence of dependency disclosure indicates either that a company has not identified the structural conditions its strategy requires, or that it prefers not to draw attention to dependencies that are currently unmet.

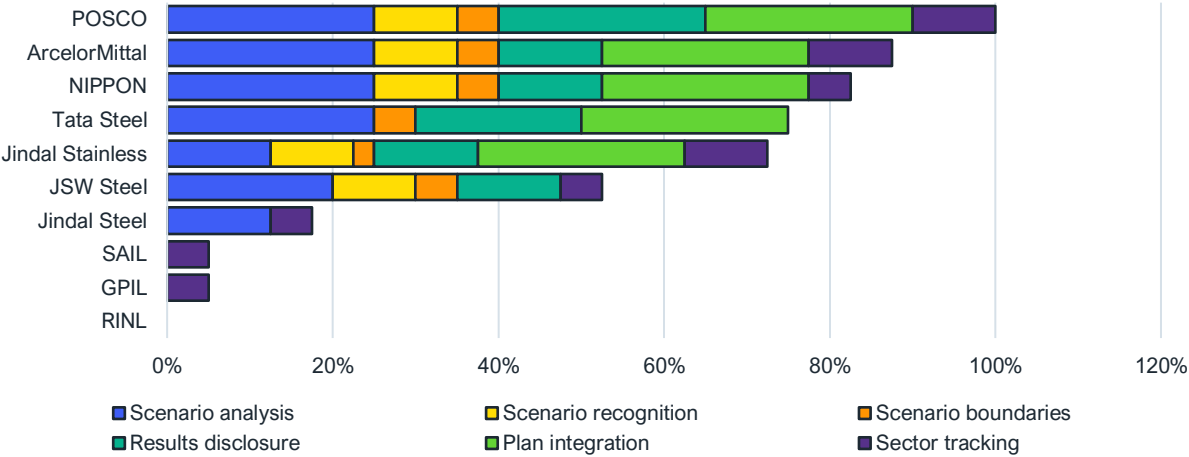
4.1.2. Scenario planning and risk assessment

The assessment scores companies across six indicators, clearly distinguishing companies with forward-looking, evidence-based planning from those lacking the analytical infrastructure to stress-

test their announced decarbonisation targets and timelines. Figure 6 summarises company scores for this parameter.

Global peers have performed comprehensive business scenario analysis. POSCO demonstrates a clear example of scenario planning integrated into strategic decision-making in its 2024 Sustainability Report.⁴⁶ It discloses quantitative results from Paris-aligned scenario analysis, defines organisational boundaries, and links scenario outcomes to specific technology choices and capital allocation decisions.⁴⁷ ArcelorMittal, too, has applied a comparable approach, using scenario insights to frame its technology roadmap and transition sequencing.

Figure 6: Assessment score for scenario planning and risk assessment



Source: IEEFA analysis

Among Indian companies, Tata Steel and Jindal Stainless have undertaken scenario analysis and partially disclosed how results inform strategic decisions. JSW Steel has conducted scenario work but discloses limited results. Jindal Steel’s scenario analysis, where disclosed, appears to be a standalone exercise rather than an input to planning. SAIL, GPIL, and RINL have provided no public evidence of scenario analysis.

“ The core distinction is between companies that treat scenario planning and risk assessment as a strategic intelligence tool, and those that treat it as a disclosure exercise. At this stage, only a minority of companies assessed demonstrate the former.

⁴⁶ POSCO. 2024 POSCO HOLDINGS Sustainability Report. 2025.
⁴⁷ POSCO demonstrates best-practice climate governance through comprehensive, quantitative scenario analysis incorporating 1.5C pathways, aligned with TCFD, International Sustainability Standards Board (ISSB), European Sustainability Reporting Standards (ESRS), and Global Reporting Initiative (GRI) frameworks. The company applies double materiality assessments and discloses organisation-wide climate risks and opportunities, linking scenario outcomes directly to decarbonisation pathways.

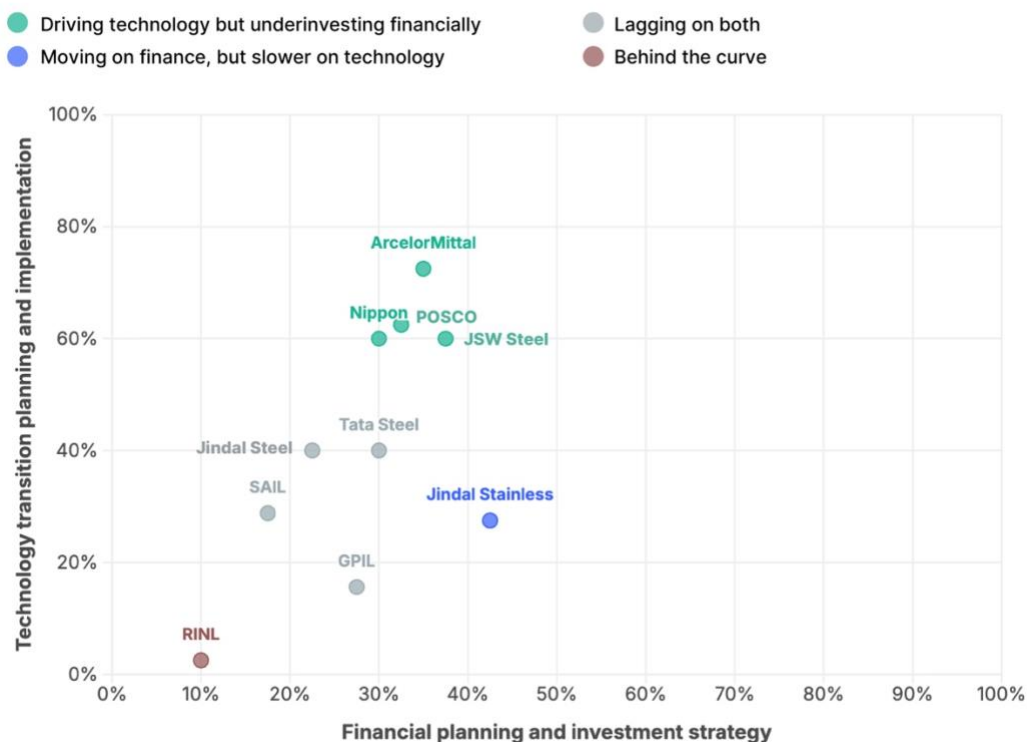
Leading companies use scenario outputs to frame technology choices, investment timing, and risk mitigation. Some of the companies in this assessment include scenario sections in their sustainability reports that do not visibly connect to capital allocation decisions or transition sequencing, and others have not engaged with the exercise at all.

4.2. Implementation readiness: Assessing integration between financial alignment and operational execution

The implementation readiness assessment evaluates how effectively steel companies translate climate ambitions into operational capabilities. This analysis examines two fundamental dimensions: technology transition planning and implementation readiness, and financial alignment.

The results in Figure 7 show a consistent divergence: technology planning scores exceed financial alignment scores across every company in the assessment — a pattern that holds for global peers as well as Indian producers.

Figure 7: Technical execution vs financial resources allocation and disclosures



Source: IEEFA analysis

Global peers score between 60% and 73% on technology transition planning and implementation readiness, supported by quantified abatement levers, asset-level relining timeline disclosures, and

more developed pipelines of low-carbon steel projects (Figure 7). Their financial alignment scores, however, range between 20% and 38%.

Among Indian companies, JSW Steel performs closest to global peers, scoring 60% on technology planning and 38% on financial alignment. Tata Steel follows with more moderate scores (40% and 30% respectively), indicating early-stage capabilities but limited depth in either dimension. Both companies have outlined transition intentions, but neither demonstrate the level of financial commitment or project-level specificity seen in their disclosed technology ambitions.

This divergence between the two parameters is significant. It suggests that technology roadmaps across the sector have not yet cleared internal investment hurdles, and that high technology planning scores, in the absence of corresponding financial commitment, may overstate actual transition readiness.

In part, this reflects the current scale of activity: Low-carbon steel pilots still constitute a small fraction of these companies' overall project pipelines, meaning associated capital expenditure may fall below the materiality thresholds that trigger detailed disclosure. However, this explanation is itself indicative of the wider problem. The financial gap is not merely a reporting artefact but a reflection of how marginal green steel projects remain relative to conventional capacity expansion, particularly in a market where companies are simultaneously scaling production.



Financial alignment is the weakest link across the sector — no company scores above 43%, indicating that climate commitments remain largely disconnected from capital allocation decisions.

The implementation gaps observed in this assessment should be understood in the context of the broader economics of green steel, which remain challenging across all geographies. Public subsidies per tCO₂ abated in announced green steel projects globally range from USD110 to USD1,168 (INR10,340 to INR109,792), exceeding the current EU carbon price by a factor of between 1.5x to 13x. The roughly USD24 billion (INR2.26 lakh crore) invested in steel decarbonisation projects worldwide has been overwhelmingly enabled by public capital — direct grants, government-backed credit guarantees, export credit agency support, or operational subsidies.⁴⁸

Even global leaders are navigating considerable uncertainty. ArcelorMittal cancelled a EUR1.3 billion (INR14,300 crore) grant-supported DRI project in Germany, citing prohibitive energy costs⁴⁹. Thyssenkrupp placed its hydrogen supply tenders on hold after securing only 5% of required volumes despite EUR2 billion (INR22,000 crore) in committed public funding.⁵⁰ SSAB's Mississippi

⁴⁸ IEEFA. [The critical role of public capital in financing India's green steel development](#). 27 November 2025. Page 4.

⁴⁹ Reuters. [ArcelorMittal drops plans for green steel in Germany due to high energy costs](#). 20 June 2025

⁵⁰ Eurometal. [Thyssenkrupp Steel pauses German green hydrogen tender on high prices](#). 26 March 2025

project collapsed when its hydrogen supply partner failed.⁵¹ Stegra's EUR6.5 billion (INR71,500 crore) integrated facility in Sweden is facing financing challenges driven by rising costs and the need for replacement of grants.⁵²

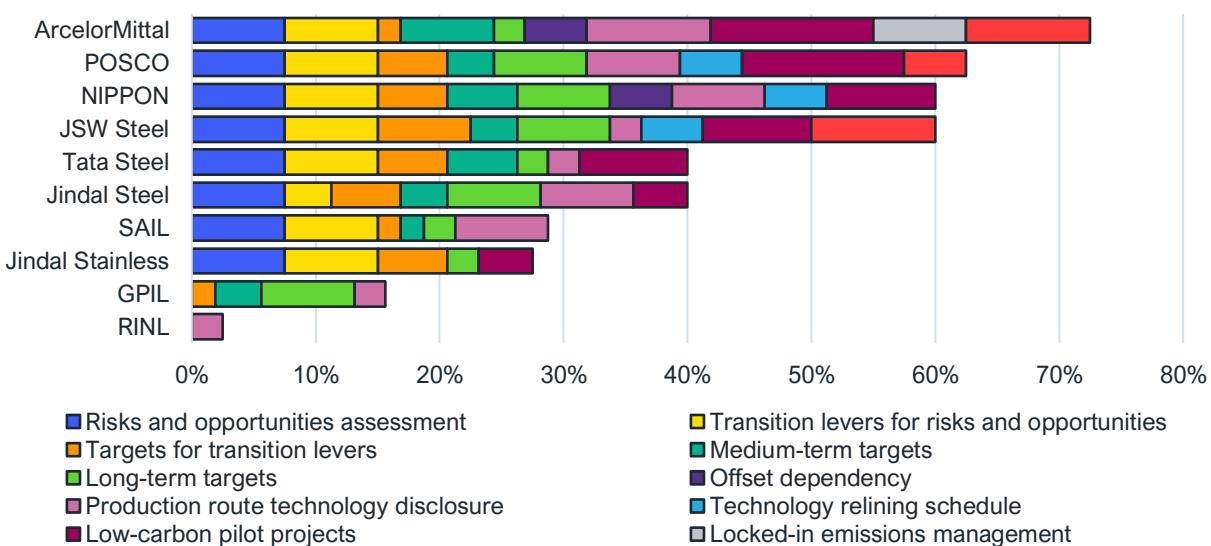
This international context is essential for interpreting the Indian environment, where companies are operating without carbon pricing implications, and fiscal support is a fraction of what European and North American projects receive.

The weak performance of the public sector producers, SAIL and RINL, is particularly notable given their significant share of national capacity. Both score below 27% on technology planning and financial alignment combined, indicating minimal operational or financial planning for the transition.

4.2.1. Technology transition planning and implementation readiness: From strategy to operational credibility

As can be seen in Figure 8, global peers have scored higher given their advantage in three areas: quantified emission reduction contributions for each transition lever, disclosed relining timelines that make technology switching windows visible, and a more developed pipeline of committed low-carbon projects.

Figure 8: Assessment score for technology transition planning and implementation readiness



Source: IEEFA analysis

In the Indian context, JSW Steel, Tata Steel, and Jindal Steel have made some progress, while SAIL and Jindal Stainless sit at an earlier stage, with strategies that remain largely qualitative. GPIL and

⁵¹ Steelradar. [SSAB withdraws from green steel plant project in the USA](#). 17 January 2025

⁵² H2eg. [Stegra secures €37m grant but funding gap remains for green steel plant](#). November 2025.

RINL are furthest behind: neither operates low-carbon pilots, and neither has assessed locked-in emissions from its existing asset base.

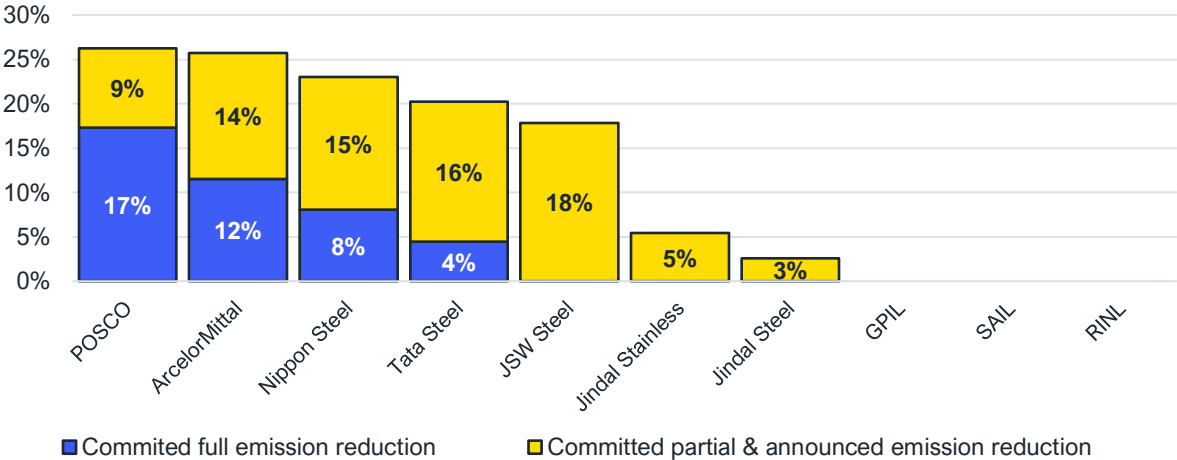
“ **What separates global peers from most Indian companies on this parameter is the depth of operational integration behind their stated net zero ambitions. Global peers have embedded decarbonisation into technology roadmaps, capital allocation, and risk management in ways that connect targets to asset-level decisions.**

It is important to note that these indicators are largely forward-looking disclosures and hence, they should be interpreted with caution. Their credibility will ultimately depend on whether stated plans translate into concrete execution through deployed projects, capital allocation, and measurable emissions reductions over time.

4.2.1.1. Pilot and demonstration projects

Pilot deployment is where strategy becomes visible as action. The assessment distinguishes between announced pilots and committed pilots (those with financing, supplier contracts, or construction underway), and between partial emission reduction technologies (such as hydrogen injection into BF, carbon capture, or biomass substitution) and full emission reduction technologies such as hydrogen-based DRI-EAF and electric steelmaking. Committed pilots using full emission reduction technology carry the highest weight as they represent the most credible pathway to deep decarbonisation.⁵³ Figure 9 presents the announced and committed low-carbon pilot projects planned by the companies under analysis.

Figure 9: Low-carbon pilot capacities as percentage of projected capacity additions through 2034



Source: BNEF, GEM and IEEFA analysis

⁵³ BNEF. Decarbonizing Steel: Project Database.

POSCO and ArcelorMittal have pilot projects covering approximately 26% of their projected capacity additions, across both full and partial emission reduction technologies.⁵⁴ Of this, committed projects with full emission reduction potential cover 17% and 12% of projected capacity additions respectively. Nippon Steel's pilot projects cover about 23% of projected capacity additions, with 8% committed to full emission reduction potential technologies.

Tata Steel and JSW Steel are catching up with global peers on total pilot coverage with about 20% and 18% of projected capacity additions, respectively. However, on committed near-zero steelmaking capacity, the gap is significant: Tata Steel has approximately 4% of projected capacity additions committed to full emission reduction potential technologies, while none of JSW Steel's projects falls under the category.⁵⁵



While Tata Steel and JSW Steel match global peers on total pilot coverage as a share of projected capacity additions, they trail significantly on committed near-zero steelmaking capacity.

Other Indian majors show substantially lower deployment. Jindal Stainless and Jindal Steel have pilot projects that represent less than 5% of their projected capacity additions. SAIL has provided minimal disclosure on pilot projects, while RINL and GPIL have provided no disclosure on pilot projects, demonstration facilities, or early-stage commercial deployments.

Our assessment reveals a fundamental gap in the quality of decarbonisation in the Indian steel sector. While a small group of private companies has initiated early pilots, most of India's production capacity, particularly within public-sector companies, shows no visible evidence of low-carbon steel deployment. This execution gap persists despite widespread adoption of Paris-aligned net-zero targets, highlighting the disconnect between strategic ambition and operational transformation.

It is also important to note that despite the significant pipeline of low-carbon pilot and demonstration projects, the overall transition impact remains constrained by the continued dominance of high-emissions technologies in future capacity additions. More than 74% of projected capacity growth across these companies is still expected to rely on conventional or transitional production routes, risking long-term locked-in emissions.

4.2.1.2. Transition lever identification and quantification

All companies except RINL have identified transition levers: The technology pathways through which they intend to reduce emissions. The gap lies in quantification: whether those levers are linked to

⁵⁴ GEM. [Iron and Steel Tracker](#). March 2025. Projected capacity additions for each company calculated using the GEM's list of plant level data as of March 2025.

⁵⁵ BNEF. [Decarbonising Steel Project Database Excel Database](#). October 2025.

specific emissions reduction targets across short-, medium-, and long-term horizons. Without that quantification, a transition plan is a menu, not a roadmap.



Identifying transition levers is a necessary but insufficient condition for a credible decarbonisation strategy. What matters is whether those levers are quantified, and for most Indian companies, they are not.

Global peers are notably more advanced. ArcelorMittal's emission reduction plan specifies that clean electricity will contribute 2.1% of its emission reduction, energy transformation will contribute 1.6%, and its announced DRI-EAF capacity will contribute 7.5%.⁵⁶ Nippon Steel has undertaken a detailed exercise linked to Japan's national Green Transformation (GX) strategy, though the depth of this analysis at a corporate portfolio level is debatable.^{57,58}

Among Indian companies, JSW Steel, Jindal Steel, and Tata Steel have identified and quantified few of their transition levers linked to emission reduction targets. JSW Steel has quantified material efficiency as contributing approximately 23% of its emission reduction target but has not quantified the contributions of other identified levers such as renewable energy and gas injection.⁵⁹ SAIL, Jindal Stainless, GPIL, and RINL provide lever identification without quantification, or, in the case of GPIL and RINL, limited identification.

Carbon offset strategy is a related disclosure gap.^{60,61} Nippon Steel and ArcelorMittal have stated their intention to use carbon offsets to achieve their net-zero targets. No other company has disclosed a position on offset reliance. Without such disclosure, stakeholders cannot determine whether stated net-zero commitments are grounded in operational transformation or are dependent on external mitigation that has not yet been secured, quantified, or costed.

⁵⁶ ArcelorMittal. [Climate Action Report 2021](#). July 2021. Page 13. Note: While we have taken data as per the officially available targets, ArcelorMittal stated in its 2024 Annual Report that it has put its climate targets under review and will revise them in its Climate Action 3 report.

⁵⁷ Nippon. [Nippon Steel's Green Transformation \(GX\) Initiatives](#). 13 March 2025.

⁵⁸ Ministry of Economy, Trade and Industry. [Japan Green Steel](#).

⁵⁹ JSW Steel. [Climate Action Report 2024](#). Page 42.

⁶⁰ Science Based Targets. [SBTi launches world-first net-zero corporate standard](#). 28 October 2021.

⁶¹ Carbon offsets: While offsets should be last resort after exhausting direct emission reduction opportunities, their disclosure remains critical for distinguishing between real operational decarbonisation and accounting-based emission reductions. In this assessment, transition strategies are considered credible when carbon offsets account for less than 10% of total emission reductions, signaling that the majority of decarbonisation is achieved through operational changes.

Figure 10: Risk identification and quantification disclosure

	Risk identification	Levers identification for emission	Contribution of each lever to emission reduction	Carbon offsets
Global peers			 ArcelorMittal has done this for fewer long-term levers	 ArcelorMittal and Nippon only
JSW, Tata Steel and Jindal Steel		 Fewer levers	 Less defined	
SAIL, Jindal Stainless and GPIL		 Very few levers	 Least defined	
RINL				

Source: IEEFA analysis

Global peers demonstrate decent progression through risk identification, comprehensive transition lever quantification, and selective offset disclosure, while JSW Steel, Tata Steel, and Jindal Steel have identified risks but provide only partial or less-defined quantification of their emission reduction pathways (Figure 10).

4.2.1.3. Asset-level production and relining transparency

Relining schedules reveal when technology substitution decisions will actually be made. A company with a blast furnace due for relining in 2027 faces a binary decision: Conventional reline, locking in coal-based production through the mid-2040s, or a technology switch at higher upfront cost that changes the emissions trajectory. Without visibility into these schedules, investors and lenders cannot assess when commitments will be tested against commercial choices.

Among the companies assessed, only SAIL, Jindal Steel, and the global peers provide meaningful disclosure on current production routes and capacities. Only three companies, Nippon Steel, POSCO, and JSW Steel, have shared broad timelines for BF relining activities. Most Indian producers have not integrated relining disclosure into their transition planning communications. This limits stakeholders' ability to assess whether net-zero timelines are consistent with the asset replacement cycle, or whether stated 2050 targets implicitly assume that conventional relines will occur alongside late-cycle retrofitting.

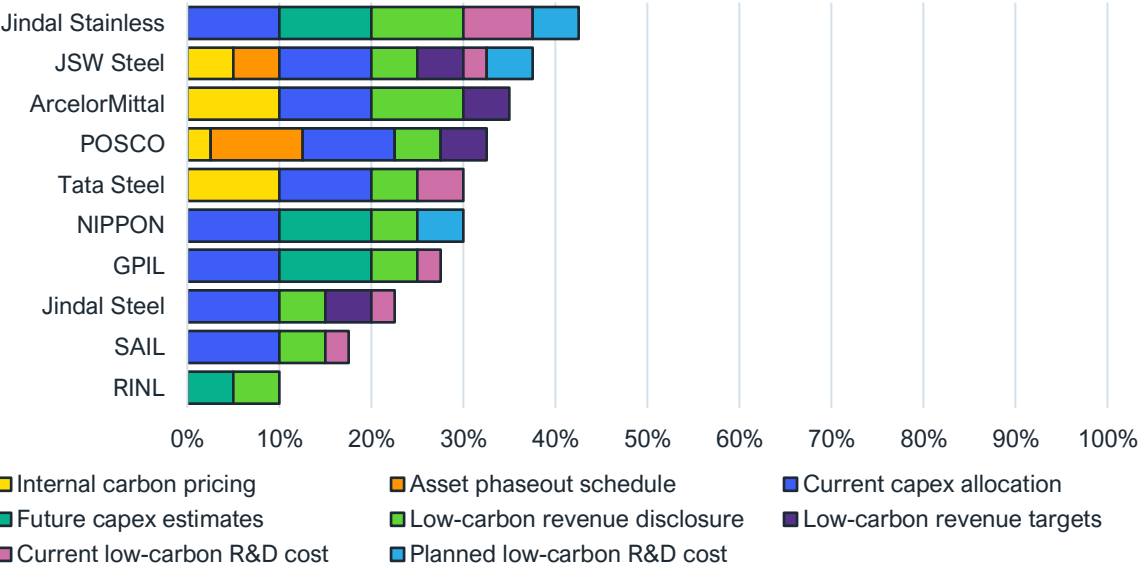
The limited transparency on production routes contrasts with global peers, where production route disclosure has become standard practice, likely driven by regulatory requirements and investor expectations in their home markets.

4.2.2. Financial planning and investment strategy for decarbonisation

This parameter yields the assessment’s most counterintuitive result. Across all eight indicators, no company scores above 43%. That ceiling applies to global peers as well as Indian companies. While ArcelorMittal, POSCO, and Nippon Steel lead across the strategic and implementation layers, they score between 20% and 38% here. The financial planning weakness is not an Indian underperformance relative to a higher global benchmark, it is a sector-wide gap. That gap is rooted in the same market reality: Technology planning advances faster than capital commitment because planning costs little, while capital commitment requires a commercially viable business case.

Figure 11 shows the scores each of these companies secured for the parameter.

Figure 11: Assessment score for financial planning and investment strategy



Source: IEEFA analysis



Two Indian companies, Jindal Stainless and JSW Steel, at 43% and 38% respectively, outperform all three global peers on financial planning and investment strategy disclosure, reflecting more systematic reporting on capital expenditure projections and low-carbon revenue strategy than their larger international counterparts.

4.2.2.1. Factoring internal carbon pricing

ICP is the mechanism through which a company introduces the future cost of carbon into its investment appraisal before any external pricing mechanism requires it to. Of the ten companies assessed, ArcelorMittal, JSW Steel, Jindal Steel, and Tata Steel have disclosed the use of ICP in some form. Of these, only ArcelorMittal and Tata Steel have provided detail on the applicable carbon price and the scope of its application. The remaining six companies have either not adopted ICP or have not disclosed it — a meaningful gap given that ICP is widely recognised as a foundational tool for embedding transition risk into capital allocation.

4.2.2.2. Capital expenditure allocation and high-carbon asset phaseout

POSCO, ArcelorMittal, JSW Steel, and Tata Steel have disclosed capital expenditure (capex) projections for low-carbon technology investments, providing at least a partial view of how climate-aligned spending compares to overall capital programmes. No other company has done so.

On asset phaseout, POSCO stands alone, with a specific commitment targeting elimination of high-emission assets by 2040. JSW Steel has stated an intention to phase out existing capacity by 2050, aligning its asset retirement programme with its net-zero target year. No other company has provided equivalent disclosure.

For a sector in which new BF capacity is simultaneously being commissioned and net-zero targets are being set for 2050, the absence of phaseout timelines represents a structural inconsistency in most companies' stated strategies.

4.2.2.3. Revenue from low-carbon production

All companies generate some revenue from low-carbon steel products, though in every case the volume is small relative to total production. ArcelorMittal, POSCO, JSW Steel, and Jindal Steel have set explicit targets for increasing that revenue share over time. The remaining companies report current low-carbon revenue without articulating a trajectory. Revenue targets matter because they create a commercial logic and a board-level accountability mechanism for scaling low-carbon capacity. Without them, low-carbon production can remain at pilot scale indefinitely.

4.2.2.4. R&D allocation to low-carbon technology

This indicator reflects the company's long-term innovation capacity and preparedness for deep decarbonisation. Jindal Stainless is the only company that has disclosed its share of R&D expenses in low-carbon steel production and its expected R&D share for low-carbon steel production as part of its response to the CDP questionnaire. Other Indian companies have disclosed information on their current share of R&D expenses incurred for environmental, social, and governance (ESG)-related spends as part of their BRSR reporting.

Taken together, the financial planning and investment strategy, findings point to a sector still in the early stages of integrating climate commitments into capital allocation discipline. Bridging that gap

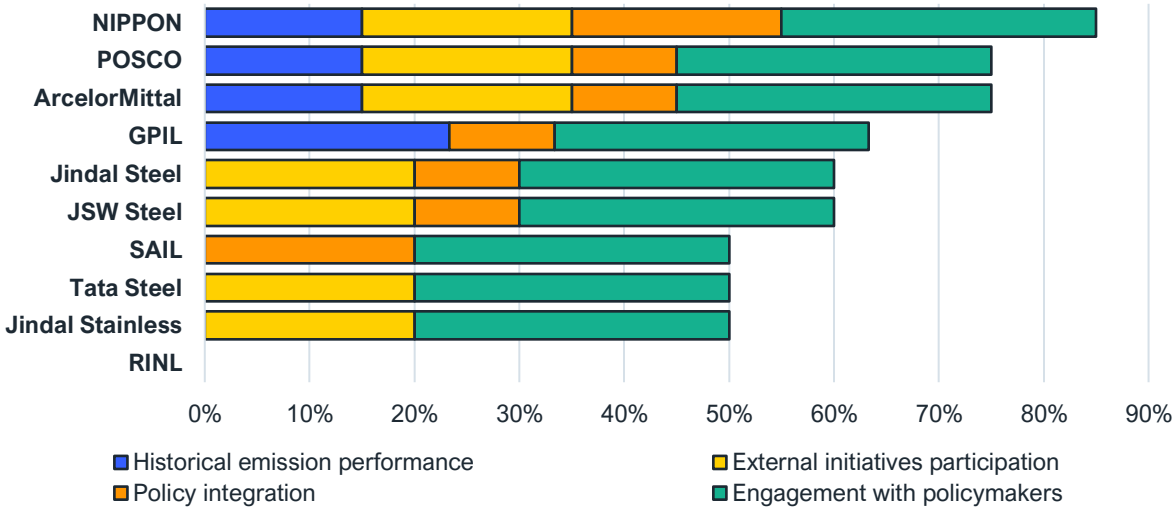
requires the commercial conditions — carbon pricing, green procurement mandates, and public co-financing — that make low-carbon investment decisions rational within a company’s capital allocation framework. In the absence of those conditions, financial planning and investment strategy scores across this assessment will remain constrained regardless of the sophistication of stated transition strategies.

4.3. Credibility validation layer

4.3.1. Historical performance evidence

The credibility validation layer provides the empirical test that the preceding two layers cannot. Historical performance evidence parameter reveals whether companies are delivering measurable emissions reductions alongside their stated plans or whether the two are moving in opposite directions. Figure 12 presents the scores secured by each of the companies assessed.

Figure 12: Assessment score for historical performance evidence parameter



Source: IEEFA analysis

The headline finding is direct. With one exception, the emissions performance of Indian steel companies has worsened over the three years in which Paris-aligned targets have been most widely adopted. Across FY2022 to FY2025, emissions intensity at JSW Steel, Tata Steel, SAIL, Jindal Steel, Jindal Stainless, and RINL increased rather than declined. GPIL is the exception. Its emissions across all scopes decreased by 6.5% over this period. Global peers have been able to reduce their emissions over this period. however, in the case of Nippon Steel, the reduction is driven primarily by reduced annual production rather than by technology-led intensity improvement.



With one exception, every Indian steel company assessed saw its emissions worsen between FY2022 and FY2025 — the same period in which Paris-aligned net-zero targets became near-universal across the sector.

The worsening emissions trajectory among Indian companies has a credible structural explanation: Most major producers are in an active capacity expansion phase. When new, high-emission capacity comes online faster than efficiency improvements can offset it, aggregate and often intensity-based emissions rise even if operational improvements are underway at existing facilities. This is a structural dynamic of the sector's growth cycle in India, not necessarily evidence of bad faith.

This distinction matters, but it does not dissolve the credibility problem. Companies are scaling production through routes they have committed to phase out, at a pace that widens rather than closes the gap between current performance and their stated 2050 endpoints. For investors assessing transition credibility, a company whose emissions are rising while it holds a Paris-aligned net-zero target faces a higher evidential burden, not a lower one.

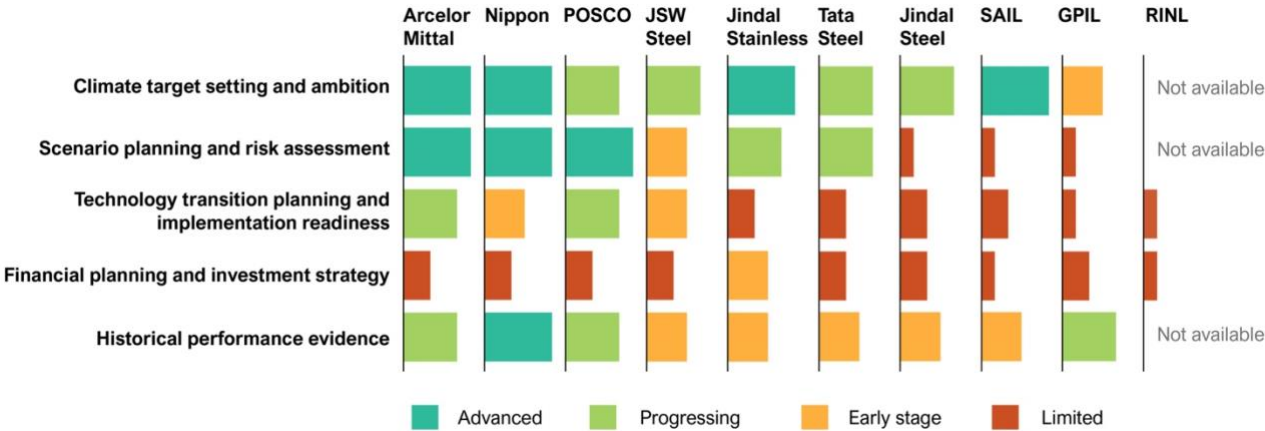
Participation in recognised industry initiatives — CDP, SBTi, and Responsible Steel — provides a separate signal. All companies except GPIL, SAIL, and RINL actively participate in at least one of these frameworks. The data requirements, methodology reviews, and public accountability embedded in these initiatives impose a degree of discipline that purely internal target-setting does not. The limitation is that participation in disclosure frameworks does not, by itself, drive emissions reductions. A decade of TCFD-aligned climate disclosure has not produced commensurate emissions outcomes across hard-to-abate sectors. The credibility contribution of initiative participation in this assessment is therefore treated as a signal of governance quality and engagement with the policy ecosystem, not as evidence of transition progress.

Taken together with the findings from Sections 4.2 and 4.3, the picture is coherent: Companies have set targets, technology planning is advancing among the leaders, but capital allocation has not moved, and emissions are heading in the wrong direction. Scores on forward-looking indicators reflect the quality of disclosed commitments at the time of assessment. Future performance will depend on whether companies execute against these plans — and it is that execution, not the plans themselves, that will determine the pace and scale of decarbonisation in the steel sector.

4.4. What the cross-parameter picture reveals

The five-parameter scorecard in Figure 13 presents the assessment results in aggregate. Across the full picture, four cross-cutting patterns warrant attention that individual parameter analysis does not fully surface.

Figure 13: Steel industry climate and strategy scorecard



Source: IEEFA analysis.

“ The technology-finance gap visible across all ten companies is not a disclosure deficiency — it reflects a market structure in which the economics of green steel do not work without public capital support, regardless of geography.

4.4.1.1. The private/public sector divide is structural, not incidental

The most consistent pattern in the data is not the gap between Indian companies and global peers, it is the gap within India’s own steel sector between its private producers and its public sector undertakings. SAIL and RINL collectively account for a significant share of national steelmaking capacity, yet across all five parameters, they perform at or near the bottom of the assessed group. While they have set climate targets, neither company has provided evidence of scenario analysis, pilot project deployment, financial allocation to low-carbon technologies, or relining schedule disclosure.

This is not a disclosure gap that better reporting would resolve. It reflects the structural challenges facing public sector producers operating under different governance frameworks, capital allocation constraints, and incentive structures than their private counterparts. Improving SAIL’s and RINL’s transition readiness requires interventions at the level of ownership structure and governance, not just climate disclosure standards.

4.4.1.2. Technology-finance gap is a global failure, not an Indian reporting deficit

No company in the assessment scored above 43% on financial planning and investment strategy. The pattern is consistent with what the international evidence on green steel economics shows, that the technology planning that registers well in corporate disclosures has not translated into committed

capital at the scale the transition requires. High scores on technology planning, including those achieved by global peers, should therefore be understood as assessments of planning sophistication, not predictors of execution. For Indian companies, the gap is wider still. The policy environment that has enabled even partial execution elsewhere — through measures such as carbon pricing, green steel procurement mandates, or public financing facilities — does not yet exist at scale in India.

4.4.1.3. Locked-in emissions set the arithmetic against which 2050 targets must be judged

The annexure analysis estimates cumulative locked-in CO₂ emissions from the operating, announced, and under-construction capacities of the seven Indian companies assessed at approximately 33.7Gt through 2070, assuming one conventional reline cycle. Under a no-reline scenario, the four smallest producers — GPIL, Jindal Steel, Jindal Stainless, and RINL — could theoretically meet their net-zero targets by 2050 through natural asset retirement alone. Analysis of locked-in emissions shows that 2050 targets are not consistent with conventional relining and conventional new-build. Every relining decision that occurs without a technology switch, and every new capacity addition on BF-BOF routes, narrows the feasible pathway. For Indian companies simultaneously commissioning new BF-BOF capacity and setting 2050 net-zero targets, these decisions are being made now.

4.4.1.4. Forward-looking scores must be interpreted against the credibility baseline

The forward-looking scores in this assessment should be treated as leading indicators of future performance potential rather than as current performance measures. For investors, the relevant question is not which companies score highest today, but which of the companies with credible planning frameworks are also beginning to close the gap between plans and measurable outcomes at the asset level. On that criterion, Tata Steel's pilot deployment coverage — comparable to global peers, as Figure 9 shows — and JSW Steel's advancing technology planning represent the most credible convergence between ambition and early execution in the Indian context. The remaining companies, including the public sector undertakings, have not yet demonstrated that convergence.

5. Conclusion

This assessment set out to determine whether India's major steel companies are genuinely prepared for a low-carbon transition, or whether stated climate ambitions mask a widening gap between commitments and operational reality. The findings point clearly toward the latter. The Indian steel sector has embraced Paris-aligned climate targets at a pace that exceeds national policy requirements, yet this ambition is not matched by corresponding progress in scenario planning and risk assessment, technology deployment, or capital allocation. The result is a sector where commitments are broadly aligned with global norms, but where the operational and financial infrastructure to deliver on those commitments remains underdeveloped.

The window for action is narrowing. With 43MTPA of blast furnace capacity due for relining before 2030, and over two-thirds of planned capacity additions following the conventional BF-BOF route, investment decisions made in the next five years will determine emissions trajectories through mid-century. Unlike in Europe, Japan, or South Korea, where nearly half of existing BF capacity has exceeded its 40-year design life creating natural openings for technology substitution, India's young asset base offers no such structural opportunity. The sector must actively choose transformation rather than wait for assets to retire. Further delays risk locking in emissions for decades while simultaneously exposing companies to tightening carbon border adjustments, green procurement mandates, and investor pressure for credible transition plans.

The divergence within India's steel sector is as significant as the gap with global peers. JSW Steel and Tata Steel have begun building the strategic, technological, and financial foundations for transition; Tata Steel's pilot deployment, comparable to global peers, demonstrates that execution at scale is achievable within the Indian context. Public-sector producers, by contrast, show minimal evidence of substantive transition planning. This divergence carries material consequences: As sustainability-linked finance and low-carbon procurement expand, companies without credible transition strategies will face constrained market access and higher capital costs. This dynamic may prove critical given the magnitude of investment required to remain competitive while decarbonising.

What separates credible transition planning from aspirational commitments is not the ambition of stated targets but the specificity of asset-level decisions, the alignment of capital allocation, and the pace of early deployment. These are the dimensions on which progress or its absence will become visible over the next five years. For policymakers, the concentration of relining decisions in the near term creates a window of opportunity in which fiscal incentives, removing structural barriers, and mandating green steel procurement could shift technology choices at scale. The steel sector's transition will ultimately be determined not by the targets companies announce, but by the investments they make and the assets they build. On that measure, India's steel sector remains at an early stage, and the next five years will show whether the ambition now visible in corporate disclosures translates into the operational transformation that decarbonisation requires.

6. Annexure

6.1. Significant locked-in emissions for all assessed companies

Locked-in emissions refer to the cumulative CO₂ emissions that steel assets will generate over their remaining operational life, assuming current technology and production processes continue unchanged. Once a blast furnace is built or relined, the associated emissions are effectively “locked in” for the duration of its operating life — typically 25 years for a new asset, with an additional 15-20 years if relined. To illustrate the scale of carbon lock-in facing Indian steel producers — and why disclosure of this metric should be a baseline expectation for credible transition planning, we have independently estimated locked-in emissions for the seven Indian companies in our scope. We have explained the approach to estimate the carbon lock-in in the next subsection.

6.1.1. Approach used

Capacities: Operating, announced and under-construction steel capacities as of July 2025 are as per GEM July 2025 dataset. Total capacity includes current operating assets, announced capacities, and under-construction capacities.

Life of plants: Average age of new plant is assumed to be 40 years (25 years of general life and 15 years of retrofitted life). The life of the existing plant is also assumed to be 40 years; hence, the remaining life is 40 years less than the number of years since the plant started operations. Plants that have exceeded their life and are still active have been given an additional life of 15 years from 2025 onwards.

Emission factors: Emission factors for each company are derived from its financial reports; wherever these are not available, the average emission factor published by the Ministry of Steel is referred.

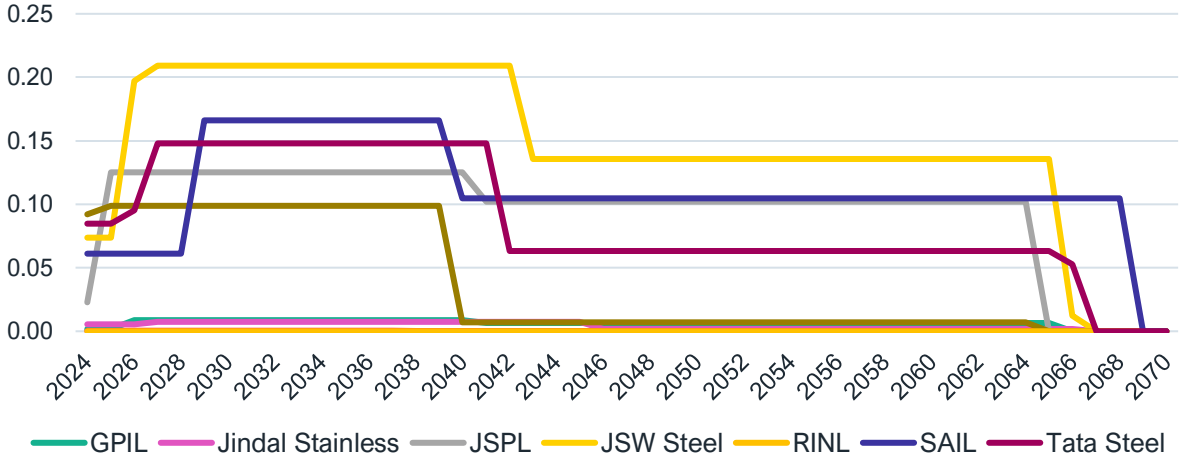
Annual emissions calculation: For each asset, annual locked-in emissions are calculated by multiplying capacity by the relevant emission factor. These annual figures are then summed across each year of remaining asset life to derive cumulative locked-in emissions.

6.1.2. Results

6.1.2.1. Scenario 1: With one reline

Under a more realistic scenario where blast furnaces undergo one conventional reline, emissions from all seven companies extend beyond their net-zero target year of 2050. As shown in Figure 14, emissions continue until approximately 2070 across all companies assessed.

Figure 14: Locked-in emissions per annum for operating, under-construction and announced capacities with one reline (Gt)

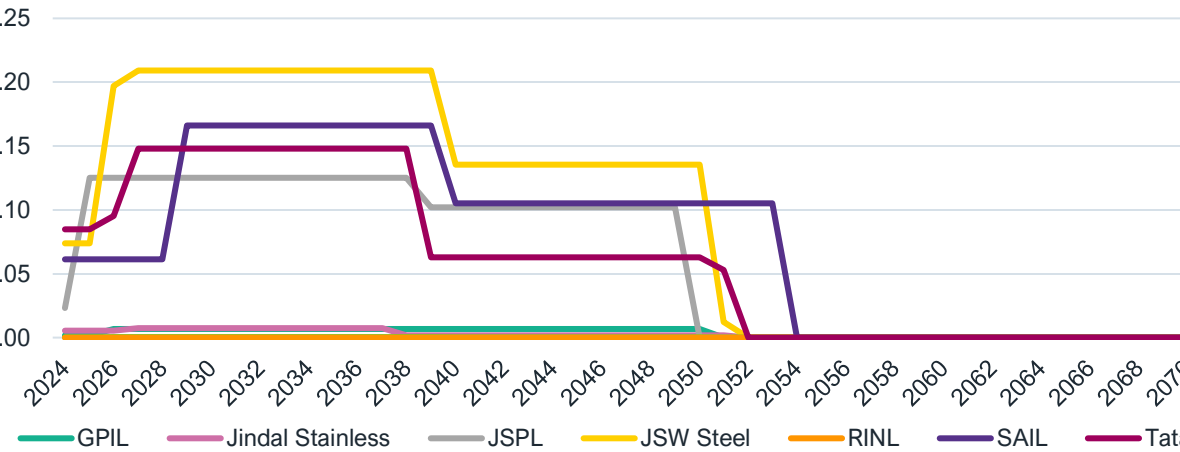


Source: IEEFA analysis

6.1.2.2. Scenario 2: Without reline

If companies continue operations under current technology and retire assets at the end of their initial 25-year life, GPIL, Jindal Steel, Jindal Stainless and RINL will be able to meet their emission reduction targets and achieve net zero by 2050. However, JSW Steel, SAIL, and Tata Steel, given their larger and younger asset bases, will continue to generate emissions beyond 2050 even without relining (Figure 15).

Figure 15: Locked-in emissions per annum for operating, under-construction and announced capacities without reline (Gt)



Source: IEEFA analysis

6.1.2.3. Cumulative locked-in emissions

Table 2 presents cumulative locked-in emissions under the one reline scenario across three capacity categories. The operating assets of these Indian majors have locked-in emissions of 4.2Gt, about 18 times the current annual emissions of 250Mt. Announced and under-construction capacities are further expected to add another 29.5Gt of locked-in emissions till the end of their life, roughly translating to an average of about 740MTPA (three times the current annual emissions).

Table 2: Sum of locked-in emissions for India steel majors with one reline (excluding global peers)

Type of capacity	Locked-in emissions (Gt)
Operating	4.2
Operating + under-construction	7.3
Operating + announced + under-construction	33.7

Source: GEM and IEEFA analysis.

6.2. Indicator definitions and scoring criteria

6.2.1. Scoring and weighting methodology

The framework employs a five-point scale (0-4) applied to each of the 36 indicators across five parameters. Scoring criteria are defined as follows:

- Excellent performance - 4 points
- Good performance - 3 points
- Satisfactory performance - 2 points
- Poor performance - 1 point
- Inadequate performance - 0 points

Binary assessments apply to fundamental commitment questions such as the existence of a net-zero target. For indicators requiring qualitative judgement, scoring distinguishes between generic statements and operationally specific disclosures, with higher scores reserved for quantified, time-bound, and verifiable commitments.

The parameter weighing structure reflects our comprehensive analysis of similar transition readiness frameworks across multiple sectors. This incorporates insights from climate finance assessment methodologies, regulatory evaluation criteria, and academic research on corporate decarbonisation planning effectiveness. Technology transition planning and implementation readiness receives the highest allocation at 30%, reflecting its central role in determining whether emissions reductions can be delivered operationally. Climate target setting and ambition receives 25%, financial planning and

investment strategy 20%, credibility validation 15%, and scenario planning and risk assessment 10%. Maximum possible scores are 28 points for climate target setting and ambition, 24 points for scenario planning and risk assessment, 44 points for technology transition planning and implementation readiness, 32 points for financial planning, and 16 points for credibility validation, totalling 144 points.

Each parameter's contribution to the total score is calculated as a percentage of the maximum score of 4 points. This results in indicators scoring 1.0 for climate target setting (25% of 4), 0.4 for scenario planning and risk assessment (10% of 4), 1.2 for technological transition planning and implementation readiness (30% of 4), 0.8 for financial planning and investment strategy (20% of 4) and 0.6 for historical performance evidence (15% of 4). Further, each indicator's contribution to the total score is calculated as a percentage of the maximum total weighted score of the respective weighted score of each parameter. For example, the indicator on net-zero commitment accounts for 20% of the total score, i.e. the maximum weighted score for the indicator relative to the total weighted score of the indicator (0.2/1.0).

6.2.2. Indicator definitions by parameter

6.2.2.1. Climate target setting and ambition (7 indicators, 25% parameter weight)

Table 3: Climate target setting and ambition assessment framework

Indicator	Description	Maximum score (A)	Weight for parameter (B)	Indicator sub-weight (C)	Maximum weighted score (AxBxC)
Net-zero commitment	Does the company have a net-zero target?	4	25%	20%	0.20
Scope coverage	Does the target (intensity/absolute) cover all scopes?	4	25%	20%	0.20
Baseline definition	Does the company define a baseline year for net zero?	4	25%	10%	0.10
Timeline alignment	Is the net-zero target Paris-aligned by 2050?	4	25%	15%	0.15

Interim targets	Does the company provide interim and long-term targets for all emission scopes?	4	25%	15%	0.15
External dependencies	Does the company identify key external dependencies that could impact plan success?	4	25%	10%	0.10
Strategy alignment	Does the company align its plan with national/sectoral roadmaps and assess implementation implications?	4	25%	10%	0.10

Source: IEEFA analysis

Scoring guidance: Net-zero commitment scores 4 if the target is explicitly stated with a defined target year; 3 if stated without a clear timeline; 2 if implied but not formalised; 1 if referenced only in aspirational terms; 0 if absent. Scope coverage scores 4 if all three scopes are covered with quantified targets; 3 if Scopes 1 and 2 are covered with Scope 3 acknowledged; 2 if only scopes 1 and 2 are addressed; 1 if coverage is partial or unclear; 0 if not disclosed.

6.2.2.2. Scenario planning and risk assessment (6 indicators, 10% parameter weight)

Table 4: Scenario planning and risk assessment parameter

Indicator	Description	Maximum score (A)	Weight for parameter (B)	Indicator sub-weight (C)	Maximum weighted score (AxBxC)
Scenario analysis	Does the company undertake climate scenario	4	10%	25%	0.10

	analysis including Paris-aligned scenario?				
Scenario recognition	Are the scenarios globally recognised?	4	10%	10%	0.04
Scenario boundary	Does the company disclose the organisational boundary/scope for each scenario?	4	10%	5%	0.02
Results disclosure	Does the company disclose the results of scenario analysis in qualitative or quantitative terms?	4	10%	25%	0.10
Plan integration	Does the company disclose how it uses scenario analysis results to inform its transition plan?	4	10%	25%	0.10
Sector tracking	Does the company monitor and incorporate developments in other sectors (power, transport) that affect its transition?	4	10%	10%	0.04

Source: IEEFA analysis

Scoring guidance: Scenario analysis scores 4 if multiple scenarios including a 1.5°C pathway are analysed with quantified implications; 3 if Paris-aligned scenarios are included with qualitative discussion; 2 if scenario analysis is mentioned without Paris alignment; 1 if only generic risk assessment is disclosed; 0 if absent. Further scenario results score 4 if results are quantitatively disclosed, 2 if these are qualitatively mentioned, and 0 for no disclosure. Scenario result integration either scores 4 for integration of results in business strategy, or 0 for no integration.

6.2.2.3. Technology transition planning and implementation readiness (11 indicators, 30% parameter weight)

Table 5: Technology transition planning and implementation readiness assessment indicators

Indicator	Description	Maximum score (A)	Weight for parameter (B)	Indicator sub-weight (C)	Maximum weighted score (AxBxC)
Low carbon pilot projects	Is the company deploying low-carbon steel pilot projects?	4	30%	17.5%	0.21
Risks and opportunities assessment	Does the company identify key transition risks and opportunities?	4	30%	7.5%	0.09
Transition levers for risks and opportunities	Does the company comprehensively identify transition levers?	4	30%	7.5%	0.09
Targets for transition levers	Does the company identify transition levers with specific targets?	4	30%	7.5%	0.09
Medium-term targets	Does the company quantify each lever's targets across timeframes?	4	30%	7.5%	0.09
Long-term targets	Does the company identify long-term transition levers and quantify the target for each lever?	4	30%	10.0%	0.12

Offset dependency	Does the company rely on carbon offsets for more than 10% of its net-zero target?	4	30%	5.0%	0.06
Production route technology disclosure	Does the company disclose production capacity by main technologies?	4	30%	10.0%	0.12
Technology relining schedule	Does the company provide detailed BF-BOF relining schedules?	4	30%	10.0%	0.12
Locked-in emissions management	Does the company assess and disclose locked-in emissions comprehensively?	4	30%	7.5%	0.09
Contingency plan for technology delay	Does the company outline contingency plans for transition delays?	4	30%	10.0%	0.12

Source: IEEFA analysis

Scoring guidance: For instance, technology projects score 4 if these pilots cover for more than 50% of the projected capacity additions; 3 if pilots cover 25%-50% of projected capacity additions; 2 if pilots cover 10%-25% of the projected capacity addition; 1 if the pilots cover less than 10% of the projected capacity additions; and 0 if no pilot activity is disclosed. Asset-level disclosure scores 4 if capacity by technology is disclosed; 3 if aggregate capacity by technology is provided; 2 if partial technology breakdown is available; 1 if only total capacity is disclosed; 0 if not disclosed.

Identification and target setting for each of the transition levers score 4 for target setting of all the levers; 3 for target setting for fewer levers; and 1 for identification of long-term levers (no target set for each lever). Comprehensive assessment of carbon lock-in gets a score of 4; partial carbon locked-in assessment will score 2; with 0 for no carbon locked-in assessment.

6.2.2.4. Financial planning and investment strategy (8 indicators, 20% parameter weight)

Table 6: Financial planning and investment strategy assessment framework

Indicator	Description	Maximum score (A)	Weight for parameter (B)	Indicator sub-weight (C)	Maximum weighted score (AxBxC)
Internal carbon pricing	Does the company disclose internal carbon pricing mechanisms?	4	20%	10%	0.08
Asset phaseout schedule	Does the company state phaseout of capex into existing unabated carbon-intensive assets?	4	20%	10%	0.08
Current capex allocation	Does the company disclose current capex allocation for high-carbon and low-carbon investments?	4	20%	20%	0.16
Future capex estimates	Does the company provide capex estimates for transition technologies?	4	20%	20%	0.16
Low-carbon revenue disclosure	Does the company disclose revenue/production from sustainable operations?	4	20%	10%	0.08
Low-carbon revenue targets	Does the company have clear targets to increase low-carbon steel revenue?	4	20%	10%	0.08

Current low-carbon R&D cost	Does the company disclose share of R&D costs for climate technologies?	4	20%	10%	0.08
Planned low-carbon R&D cost	Does the company provide estimates of expected R&D pathways?	4	20%	10%	0.08

Source: IEEFA analysis

Scoring guidance: For instance, capex allocation scores 4 if a detailed breakdown of both low-carbon and conventional investments is provided with forward projections; 3 if current allocation is disclosed without projections; 2 if only aggregate capex with qualitative low-carbon references is provided; 1 if capex is disclosed without a carbon intensity breakdown; 0 if not disclosed. Full information disclosure on revenue from low-carbon production both in absolute terms and as a percentage of revenue will score 4, while partial information will score 2, with 0 for no revenue from low-carbon asset. Climate revenue target setting gets 4 for full disclosure (i.e. in both absolute and percentage terms), 2 for partial disclosure, and 0 for no target on revenues.

6.2.2.5. Credibility validation layer (4 indicators, 15% parameter weight)

Table 7: Historical performance evidence assessment framework

Indicator	Description	Maximum score (A)	Weight for parameter (B)	Indicator sub-weight (C)	Maximum weighted score (AxBxC)
Historical emission performance	Has the company's GHG emissions intensity decreased beyond sectoral benchmarks?	4	15%	30%	0.18
External initiatives participation	Does the company participate in credible climate initiatives?	4	15%	20%	0.12
Policy integration	Does the company demonstrate good integration with evolving policy frameworks?	4	15%	20%	0.12

Engagement with policymakers	Does the company demonstrate active engagement with policymakers?	4	15%	30%	0.18
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Source: IEEFA analysis

Scoring guidance: Historical GHG reduction in the past three years beyond benchmark rates will receive a 4 score, an at-benchmark rate will get a 3 score, below benchmark rate will score 2, stagnant performance will get 1, and worsening reduction will score 0. Demonstration of integration with the national and regional steel sector will get a 4 score, partial integration will get a 2 score, and non-integration will get a 0 score.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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