

Green Steel in India: A Marketing Perspective: With Case Study of Tata Steel

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Abstract

Tata Steel provides a compelling example of how a traditional, carbon-intensive industry can successfully make a transition toward a sustainability-driven and future-ready business model. In an era where environmental concerns, regulatory pressures, and stakeholder expectations are rapidly evolving, Tata Steel has demonstrated that proactive adaptation is not only necessary but also strategically advantageous. By investing in advanced green technologies such as Electric Arc Furnaces, HIsarna processes, and lifecycle assessment tools, the company has significantly reduced its carbon footprint while improving operational efficiency. The company has effectively repositioned steel from a low-differentiation commodity to a value-added, sustainability-oriented product, thereby creating a new dimension of competition in the industry. Furthermore, Tata Steel's approach highlights the importance of integrating sustainability across the entire value chain, from raw material sourcing to end-user applications. It also illustrates how sustainability can serve as a key driver of innovation, differentiation, and long-term profitability, rather than merely a compliance requirement.

Keywords: Green Steel, Tata Steel, ESG, Carbon emission, Sustainable, Eco-friendly

1.Introduction

In modern times, the global steel industry is undergoing a major transformation due to increasing concerns of manufacturers about climate change and carbon emissions. Steel production traditionally relies on coal-intensive blast furnaces, making it one of the largest contributors to industrial CO₂ emissions. According to the World Steel Association, 2021, it is nearing about 7–9% of total CO₂ emissions worldwide. Traditional steel production is also known as a major source of greenhouse gas emissions, accounting for a substantial portion of India's industrial carbon footprint. In this context, *green steel* has emerged as a sustainable alternative produced using low-carbon technologies, such as hydrogen-based reduction, renewable energy, and electric arc furnaces (EAF). As India strives for sustainable development and commits to ambitious climate goals, the transition towards "Green Steel" manufacturing becomes imperative. Thus, the Green Steel Technology (GST) has emerged with a view to reducing the effects of harmful greenhouse gases, such as Carbon dioxide, Sulphur dioxide, Nitrogen oxide emissions, including cost cutting and quality improvement of the product. India, being the second-largest steel producer globally, is now actively transitioning toward green steel to meet its net-zero emissions target by 2070 and align with global sustainability standards.

Green steel refers to steel produced with significantly reduced carbon emissions compared to conventional methods (Singh et al. 2018). Thus, several techniques, namely Hydrogen-based

Direct Reduced Iron (H₂-DRI), Electric Arc Furnace (EAF), Carbon Capture, Utilization, and Storage (CCUS), Molten Oxide Electrolysis (MOE) (Steel Technology, 2025), and Scrap Steel Recycling (Green Fuel Journal, 2026) are emerged in this context. Beside this, the Government of India has also introduced a classification system for green steel based on emissions intensity, encouraging sustainable production practices (Ministry of Steel, Government of India, 2024).

2.Green Steel: The Marketing Context in India

India's industrial sector, especially steel, which contributes around 12 % of national CO₂ emissions faces scrutiny in the journey toward net-zero by 2070. In India, current steel-making companies emit roughly 2.55 t CO₂ per ton of crude steel, about 38 % above the global average. The government has sought approximately ₹150 billion (USD 1.7 billion) in its 2025-26 budget to incentivize decarbonization, including R&D, improved raw material use, favourable financing for renewables, and a formal definition of "green steel" (less than 2.2 t CO₂/t steel).

India's steel sector is now at a critical transition phase, driven by both domestic and international pressures. The key market driven factors are Environmental regulations and ESG compliance, Export requirements (EU carbon border taxes), Demand from infrastructure and real estate sectors, Government push for sustainable construction. Beside this, the government is also considering a mandate that would require the use of green steel in various public sector projects. As a result, it will be a great move that is expected to generate substantial demand for low-carbon steel in the domestic market.

2.1 Environmental Regulations and ESG Compliance

Marketing of green steel in India represents a significant shift from traditional commodity-based steel marketing to a value-driven, sustainability-focused approach. Unlike conventional steel, which is primarily sold on the basis of cost, strength, and availability, green steel incorporates environmental responsibility as a core value proposition. In 2024, India became the first country to introduce an official Green Steel Taxonomy. Government policy is one of the strongest external forces is shaping the green steel market in India. Moreover, Ministry of Steel is reportedly seeking a support of around ₹15,000 crore to offer incentives to steel mills to produce low-carbon steel, reduce emissions, boost research and development, increase raw material efficiency, as well as encourage banks to offer lower interest rates on renewable energy loans.

2.2 Shift from Commodity to Differentiated Product

Green steel is not merely a product but a "responsible solution" that contributes to reducing carbon emissions across the value chain (Muslemani et al., 2021). Therefore, its marketing requires a more educational, consultative, and relationship-oriented approach. Traditionally, steel has been treated as a commodity product, where differentiation was minimal. Nowadays, green steel introduces a new dimension of differentiation based on sustainability. This shift involves branding steel based on emission intensity levels, offering certified green products, and highlighting environmental performance as a unique selling proposition. As a result, steel companies are now competing not only on price and quality but also on sustainability metrics.

2.3 Pricing and Value Proposition

Green steel is typically priced higher than conventional steel due to higher production costs associated with cleaner technologies. However, the willingness to pay this premium price varies significantly across customer segments. From the standpoint of marketing strategy, effective green steel pricing must balance cost recovery with market penetration. Thus, the marketing strategy mainly focuses on value justification rather than cost minimization, long-term savings from carbon tax avoidance, and enhancement of brand value for customers using green materials.

2.4 Distribution and Supply Chain Transparency

Green steel marketing is predominantly business-to-business (B2B) in nature. The key customers include infrastructure developers, automobile manufacturers, engineering firms, and government bodies. Companies that successfully market green steel invest in communicating their sustainability commitments, decarbonisation milestones, and certification achievements across digital platforms, industry events, and B2B engagement programmes.

2.5 Challenges in Marketing

One of the biggest challenges in marketing green steel is the lack of awareness among customers, especially in developing markets like India. To address this issue, companies used to take an initiative to educate their clients about lifecycle emissions, validate the contribution of green steel to green building certification, and explain the impact of future carbon taxes and regulations. Thus, marketing efforts often involve seminars, industry collaborations, and sustainability reports to communicate these benefits effectively. Beside this, there are several challenges, such as lack of standardisation, inadequate infrastructure for green production, high price sensitivity, and limited willingness for payment of premium price. However, these challenges require continuous innovation in marketing strategies and policy support.

3. Case Study: Tata Steel's Green Steel Marketing Strategy

3.1 Company Overview

Tata Steel, established in 1907 is one of India's oldest and most renowned steel manufacturing enterprise and a part of globally recognised Tata Group. The headquarter of this company is situated in Mumbai. Tata Steel is considered as a global leader in sustainable steel-making and has expanded its operations across India, Europe, and South-east Asia. Thus, the company's approach offers one of the most comprehensive and instructive examples in the Indian steel industry. Consolidated net turnover of the company for March, 2026 quarter hit ₹63,270 crore. The group recorded a consolidated turnover of around US\$26 billion in the financial year ending March 31, 2026.

Tata Steel is recognized not only for its production capacity and technological capabilities but also for its strong commitment towards sustainability and ethical business practices. Over the years, the company has strategically aligned its operations with global climate goals, including carbon reduction and resource efficiency. It has set an ambitious target to achieve net-zero carbon emissions by 2045, positioning itself as a leader in the transition towards green steel.

This proactive approach has helped Tata Steel build a strong reputation among investors, regulators, and environmentally conscious customers. Tata Steel's Jamshedpur Plant is India's first site to receive Responsible Steel Certification. Subsequently, its Kalinganagar and Meramandali plants have also received this certification. In India, now Tata Steel has more than 90% of its steel production from Responsible Steel certified sites.

3.2 Green Steel Initiatives

Tata Steel has undertaken multiple initiatives to reduce its carbon footprint and promote sustainable steel production. These initiatives span across technology, operations, and lifecycle management. The company has invested in Electric Arc Furnace (EAF) technology, particularly in its Ludhiana plant, which uses scrap steel and renewable energy inputs. This initiative supports the transition towards a circular and low-carbon economy.

Beside this, the company is actively developing HIsarna technology, an innovative iron-making process that eliminates the need for coke ovens and sinter plants. It represents a breakthrough in next-generation green steel technology, strengthening Tata Steel's innovation-driven positioning.

Life Cycle Assessment (LCA) is another technique adopted by the company to evaluate the environmental impact of its products from raw material extraction to end use. This technique also enhances credibility in marketing by providing quantifiable sustainability metrics to customers.

Moreover, Tata Steel offers a range of Green Pro-certified products, such as Tata Structura and Tata Tiscon, which meet stringent environmental standards. These certifications act as a powerful marketing tool, reinforcing the company's green credentials.

3.3 Marketing Strategy of Tata Steel

Tata Steel's marketing strategy for green steel is comprehensive and aligned with global sustainability trends. It integrates traditional industrial marketing with modern ESG-driven approaches. Through branded products, such as Tiscon, Pravesh, and Shaktee, company's long-term sustainability proves its domination by targeting net-zero by 2045. Even though, quarterly production of the company records at 6.34 million tons. Beside this, Tata Steel transforms from commodity supplier to solutions provider, commanding premium positioning in both B2B and B2C segments.

3.3.1 Product Strategy

The company's product strategy focuses on innovation, customer retention, and long-term sustainability. Thus, an initiation is reflected in development of eco-friendly and high-performance steel products. Even also, based on industrial requirements customized product has been launched with the presence of sustainability features into core product. Hence, it ensures that green steel is not only environmentally friendly but also technically superior and commercially viable. Value-added products launched by the company are Tisco, Shaktee, Astrum, Steelium, Pravesh and Wiron.

3.3.2 Customer-Centric Marketing Strategy

Tata Steel puts a complete attention on customer's requirements and thus develops customized steel products rather than merely selling traditional steel products. For this purpose, the company has started collaboration with builders and infrastructure companies. The company follows a solution-selling approach, where it offers technical support, design assistance, after-sales service, and supply-chain collaboration, thereby creating long-term customer relationships instead of transactional sales.

3.3.3 Brand Positing Strategy

Tata Steel positions itself as a sustainable, trusted and an ethical steel producer ever. It is one of the reputed producers of high -quality, innovative and customized steel solutions for the customers. The company emphasizes on green value creation, alignment with global climate goals and focuses on long-term benefits rather than short-term pricing decisions. This positioning helps the company appeal to environmentally conscious clients and international markets. Moreover, the company's association with the Tata Group further reinforces its brand image of trust, integrity, and social responsibility.

3.3.4 Promotion Strategy

Promotion of green steel involves a combination of both traditional as well as modern communication channels. Tata Steel regularly publishes comprehensive sustainability reports and annual reports with a view to disclose its environmental, social, and governance performance (ESG). Beside this, the company actively participates in international climate change forums, and sustainability initiatives in collaboration with global stakeholders to share its commitment towards reduction of carbon emissions and advancement of low carbon steel production. To share all its green initiatives the company engages in industry conferences, technical seminars, webinars, and knowledge-sharing platforms.

3.3.5 Digital Marketing Strategy

To connect with a broad spectrum of customers, Tata Steel introduces various digital marketing channels, such as corporate website, social media platforms, videos, blogs, and online campaigning to communicate its green initiatives. Thus, it enhances public awareness and reinforce the company's image as an environmentally responsible steel manufacturer. The company was actively pursuing a digital transformation with a view to be a leader in 'Digital Steelmaking' by 2025. Key digital marketing initiatives included Aashiyana, an e-commerce platform for individual home builders that achieved a Gross Merchandise Value (GMV) of Rs 2,240 crore in FY 2024 with a year-wise 30% growth rate.

3.4 Impact of Green Marketing

The adoption of green marketing strategies by Tata Steel has created a significant impact on the behavioural aspects of various stakeholders. The company's long-term reputation as a sustainability leader has significantly enhanced its brand equity, reinforcing its competitive standing both in national and international markets. This green steel initiative enable compliance with international regulations such as carbon trading, improving export

opportunities. Differentiation in respect of sustainability places the company ahead of its competitors, securing a pioneering position in green steel markets. Along with this, third-party certification and transparent reporting practices build buyer confidence, credibility and long-term relationships with customers. Moreover, the company by showing robust ESG performance are continuously improving their position which attract socially responsible investors and access a growing range of green financing opportunities.

3.5. Challenges in Marketing Green Steel in India

Despite Tata Steel's success and the growing regulatory push, marketing green steel in India faces several significant challenges.

Price sensitivity of the market: A large portion of India's steel demand comes from MSMEs and individual home builders who are highly price-sensitive and unlikely to pay a green premium without strong policy incentives or mandates.

Lack of awareness among end users: Unlike in Europe, where ESG awareness among buyers is more mature, many Indian industrial buyers particularly in smaller cities and towns are still unfamiliar with green steel concepts, certifications, and their business value (Coenen et al., 2022).

Absence of mandatory Green Procurement Policies: The absence of mandatory green procurement policies constitutes a notable structural barrier to the market development of green steel in India (Kumar et al., 2025). While policy discourse on the subject continues to evolve, no enforceable government regulations directly compels directive public sector agencies to procure low-carbon steel. This regulatory vacuum was explicitly replicated in the 2025–26 Union Budget. In this budget, no specific provision for the Green Steel Mission was included. However, the only proximate fiscal measure was a budgetary provision of ₹455 crore (approximately US\$55 million) for green hydrogen pilot projects in the steel sector under the National Green Hydrogen Mission.

Greenwashing Risks: As green steel becomes a marketing tool, the company also faces potential greenwashing risks (Blanco, et al., 2021) if environmental claims are perceived as exceeding measurable achievements. In the steel industry, where decarbonization is a gradual and technologically challenging process, stakeholders increasingly expect companies to substantiate claims of "green steel" with transparent life-cycle assessments (LCA), verified carbon footprint data, third-party certifications, and standardized ESG disclosures.

3.6 Conclusions

Green steel in India is transitioning from a regulatory concept to a commercially viable product category with real marketing implications. As India's steel sector navigates its path toward net-zero, the companies that integrate sustainability authentically into their marketing DNA will not only lead the green steel transition but will also secure stronger customer relationships, greater pricing power, and more resilient market positions in the decades ahead. Tata Steel's marketing strategy extends beyond selling steel as a commodity. By emphasizing customer-centric solutions, branded value-added products, sustainability, innovation, digital transformation, and an extensive distribution network, the company has built a strong

competitive position in both domestic and international markets. Its integration of ESG principles with product innovation and customer relationship management has further strengthened its brand equity and supports its long-term objective of being one of the world's most respected steel companies.

3.7 Opportunities and Future Outlook

The green steel market in India holds significant long-term marketing potential. The EU's CBAM provides a strong external incentive for Indian steel exporters to accelerate decarbonisation. The draft National Steel Policy 2025 outlines a plan to scale crude steel capacity to 400 million tonnes by 2035, while by 2035 the government wants to reduce carbon intensity to 2 tonnes of CO₂ per tonne of steel, bringing India in line with global averages. Growing ESG consciousness among large Indian corporates, expanding green building markets, and the increasing participation of institutional investors in sustainability-linked financing at all points towards a growing premium segment for green steel.

The experience of Tata Steel clearly demonstrates that the future of the steel industry lies in the synergistic integration of green technology and strategic marketing. While technological advancements reduce environmental impact, effective marketing plays a crucial role in creating awareness, influencing customer behaviour, and generating demand for sustainable products. Thus, the success of green steel ultimately depends not only on how it is produced, but also on how effectively its value is communicated and perceived in the marketplace, making marketing a critical enabler of sustainable industrial transformation.

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