Green Steel Market to Grow Rapidly by 2032, Driven by Decarbonization and Sustainable Steel Demand | DataMIntelligence

Green steel is revolutionizing the industry with hydrogen-powered, low-emission production, driving rapid growth amid global decarbonization goals.

Green Steel Market

NEW YORK, NY, UNITED STATES, July 23, 2025 /EINPresswire.com/ -- Market Overview :

The Green Steel Market is rapidly transforming the future of industrial manufacturing, emerging as a vital solution to decarbonize one of the most carbon-intensive industries globally. Traditional steelmaking contributes nearly 7–9% of global carbon emissions, primarily due to the heavy reliance on coal-based blast furnaces. Green steel, however, is produced using hydrogen-based direct reduced iron (DRI), electric arc furnaces (EAFs), and renewable energy sources drastically cutting emissions and aligning with global net-zero goals. As industries and governments intensify their focus on carbon neutrality, green steel is transitioning from a niche innovation to a mainstream imperative.

> Green steel is not just a sustainability goal it's the blueprint for industrial decarbonization, redefining how we build the future while protecting the planet."
>
> *DataM Intelligence*

In 2022, the global green steel market was valued at US$ 201.3 million. With major shifts in technology adoption, policy frameworks, and industrial decarbonization commitments, the market is projected to surge exponentially to US$ 140,435.7 million by 2031, registering an astonishing CAGR of 126.7% during the forecast period (2024–2031). This growth underscores the steel industry's pivotal role in the clean energy transition and the emergence of a new green economy.

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Green steel Market Drivers :

Decarbonization Commitments and Climate Goals: Nations across Europe, Asia, and North America have committed to carbon neutrality targets, accelerating investments in low-emission steel production.

Supportive Government Policies and Carbon Pricing: Green steel initiatives are receiving strong backing through incentives, green public procurement programs, and carbon border adjustment mechanisms (CBAM) in the EU.

Corporate ESG Pressure: Automotive, construction, and infrastructure industries are demanding sustainable supply chains to meet ESG and Scope 3 emissions reporting mandates.

Technological Advancements: Innovations such as hydrogen-based DRI, molten oxide electrolysis, and zero-carbon EAFs are making green steel commercially viable.

Strategic Collaborations and Green Hydrogen Integration: Companies are forming strategic alliances with hydrogen producers to ensure a steady supply of renewable energy and green hydrogen.

Growing Demand from Auto and Consumer Goods: Green steel is gaining traction among manufacturers like Volvo, BMW, and Apple who aim to reduce embedded emissions in products.

Green steel Market Key Players are :-

The global green steel landscape is shaped by a mix of legacy steelmakers and new-age decarbonization pioneers:

H2 Green Steel

Tata Steel Ltd.

ArcelorMittal

Voestalpine AG

Boston Metal

Nucor Corporation

SSAB AB

Nippon Steel Corporation

JFE Steel Corporation

Salzgitter AG

These players are heavily investing in R&D, green hydrogen integration, circular scrap-based steelmaking, and digital decarbonization pathways.

Green steel Market Segmentation :

By Technology

Hydrogen-based Direct Reduced Iron (H-DRI)

Electric Arc Furnace (EAF)

Molten Oxide Electrolysis (MOE)

Carbon Capture and Storage (CCS) Enhanced Steelmaking

By End-Use Industry

Automotive

Building & Construction

Industrial Equipment

Consumer Appliances

Energy & Power

Shipbuilding

By Region

North America (U.S., Canada)

Europe (Germany, Sweden, UK, France)

Asia-Pacific (China, Japan, South Korea, India)

Latin America

Middle East & Africa

Recent Developments - USA :-

In the United States, 2024 has witnessed unprecedented momentum in the green steel market. The U.S. Department of Energy announced over $6 billion in funding for industrial decarbonization projects, with several initiatives focused on hydrogen-powered and EAF steel production. Nucor Corporation, a key market player, partnered with ExxonMobil to explore carbon capture technologies in its steel facilities, targeting a 35% emission reduction by 2030.

Additionally, Boston Metal received a fresh round of Series C funding worth $262 million led by ArcelorMittal and Microsoft's Climate Innovation Fund, aimed at scaling its proprietary molten oxide electrolysis technology for fossil-free steel production in the U.S. and Brazil.

The Inflation Reduction Act continues to drive investment in green energy, offering lucrative tax credits to clean hydrogen producers, which in turn is enabling affordable hydrogen input for green steel producers.

Recent Developments in Japan :-

Japan is aligning its green steel ambitions with its 2040 carbon neutrality roadmap for heavy industry. In 2024, Nippon Steel Corporation and JFE Steel intensified their focus on hydrogen-based technologies under the Green Innovation Fund, which allocates nearly ¥2 trillion (US$13.8 billion) to industrial decarbonization projects.

Nippon Steel announced pilot production of green steel using hydrogen injection in blast furnaces , while JFE Steel is developing a zero-carbon steel product line aimed at automotive OEMs. Additionally, Japan is collaborating with Australia and the Middle East for hydrogen imports to support steel decarbonization.

Tokyo-based industrial conglomerates are also working on green steel traceability frameworks, ensuring product verification and ESG reporting across global supply chains.

Major Global Developments (2024–2025) :

H2 Green Steel (Sweden) began construction of its Boden plant the world's first large-scale greenfield steel plant running entirely on hydrogen. The company secured over €6 billion in debt and equity financing, backed by institutions like EIB, BNP Paribas, and Swedish Export Credit Agency.

ArcelorMittal committed over US$2 billion to decarbonize its European steel operations, converting blast furnaces to DRI and EAF systems, with projects underway in Belgium, France, and Spain.

Tata Steel Netherlands received government approval for its “Green Steel” roadmap, which includes shutting down coal-fired furnaces by 2030 and transitioning to green hydrogen-based steelmaking.

SSAB and Volvo Group launched the first fossil-free steel-based commercial trucks in early 2024, accelerating demand for emission-free steel in the automotive sector.

Salzgitter AG’s SALCOS project is progressing into its next phase with €1 billion in funding, aiming to reduce emissions by over 95% through EAFs and green hydrogen.

Voestalpine initiated trials of hydrogen plasma in steelmaking and signed long-term green power contracts to decarbonize operations in Austria.

Nucor launched the first net-zero certified steel product line in North America under its Econiqbrand, with clients in data centers and clean energy infrastructure.

Boston Metal is piloting its MOE technology in Brazil and the U.S., aiming for commercial scale by 2026

Conclusion :

The green steel market is entering a transformative decade. Driven by net-zero pledges, regulatory mandates, and technological breakthroughs, green steel is no longer a futuristic concept it’s rapidly becoming the backbone of sustainable industrialization. Governments, steelmakers, and end-users alike are embracing green steel as a strategic priority, with investments and policies now aligning to create a robust ecosystem for its growth.
As the market surges toward US$ 140 billion by 2031, companies that proactively adapt to this transition whether through hydrogen innovation, digitalization, or circular manufacturing will not only reduce environmental impact but also gain a significant competitive edge in a carbon-constrained world.

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