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Green Steel Market Forecasts to 2034 – Global Analysis By Product Type (Flat Steel, Long Steel, Specialty Steel, Structural Steel and Other Product Types), Energy Source, Production Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Green Steel Market is accounted for $9.8 billion in 2026 and is expected to reach $32.9 billion by 2034 growing at a CAGR of 16.3% during the forecast period. Green steel refers to steel produced through manufacturing processes that substantially reduce or eliminate carbon dioxide emissions compared to conventional blast furnace-basic oxygen furnace steelmaking, primarily through hydrogen-based direct reduction of iron ore using green hydrogen generated from renewable electricity electrolysis, electric arc furnace steelmaking powered by renewable energy, or carbon capture integration on existing steel plant emissions. Green steel encompasses flat, long, specialty, and structural steel product categories meeting equivalent mechanical performance specifications to conventionally produced steel while delivering lifecycle greenhouse gas emission reductions of 80–95% per tonne of steel produced.

Market Dynamics:

Driver:

Industrial Decarbonization Policy Pressure

Industrial decarbonization policy pressure is the primary driver compelling steel producers to accelerate green steel technology investment as carbon pricing mechanisms including the EU Emissions Trading System impose escalating costs on

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conventional blast furnace steel production, while the EU Carbon Border Adjustment Mechanism creates import competitiveness incentives for low-carbon steel from 2026. Corporate customers including automotive manufacturers and construction companies are establishing embodied carbon procurement requirements for steel inputs that are generating buyer-side demand for verified green steel supply. Government co-investment programs are de-risking green hydrogen direct reduction steel plant capital investments.

Restraint:

Green Hydrogen Cost and Availability

Green hydrogen cost and availability constraints represent the most critical barrier to green steel scaling, as hydrogen-based direct reduction steelmaking economics depend fundamentally on achieving green hydrogen prices below $2 per kilogram that current electrolysis costs cannot consistently deliver at scale. Renewable energy infrastructure limitations in steel-producing regions create green hydrogen supply bottlenecks that restrict production expansion. The capital intensity of dedicated green hydrogen electrolyzer and distribution infrastructure required for large-scale steel plant conversion substantially elevates green steel production cost premiums that current market pricing cannot adequately absorb without sustained government incentive support.

Opportunity:

Automotive Supply Chain Commitments

Automotive supply chain decarbonization commitments are generating significant demand anchor opportunities for green steel producers, as major automotive OEMs including Volkswagen, BMW, and Volvo have established near-term timelines for transitioning steel procurement to low-carbon certified supply. Premium automotive manufacturers are demonstrating willingness to pay price premiums for verified green steel that enables their vehicle lifecycle carbon footprint claims to customers. Long-term green steel offtake agreements from automotive customers are enabling steel producers to secure financing for green hydrogen-based steelmaking transformation capital projects with assured revenue visibility.

Threat:

Emerging Market Conventional Steel Competition

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Emerging market conventional steel producers operating without carbon pricing constraints represent a competitive threat to green steel market development, as low-cost steel from India, Southeast Asia, and other non-carbon-priced markets can undercut green steel pricing by substantial margins in unprotected markets. Without global carbon border adjustment mechanism implementation, imported conventional steel creates downward pricing pressure that weakens green steel premium economics. Trade policy uncertainty and potential carbon leakage through supply chain relocation to non-regulated jurisdictions could undermine green steel investment returns if carbon pricing frameworks face political rollback.

Covid-19 Impact:

COVID-19 disrupted steel supply chains and reduced industrial steel demand, temporarily depressing investment in green steel transformation programs. Post-pandemic industrial recovery combined with surging raw material price volatility exposed conventional steelmaker cost vulnerability and prompted accelerated interest in hydrogen-based production models offering energy input diversification. Pandemic-era green recovery stimulus programs in Europe and North America incorporated substantial steel decarbonization co-investment support that accelerated green steel pilot project development.

The long steel segment is expected to be the largest during the forecast period

The long steel segment is expected to account for the largest market share during the forecast period, due to its extensive application across infrastructure, construction, and renewable energy projects. Driven by rising investments in sustainable urban development and green infrastructure, demand for low-carbon long steel products is accelerating. The segment benefits from compatibility with electric arc furnace (EAF) and hydrogen-based production technologies, enabling significant emission reductions. Additionally, increasing regulatory pressure and ESG commitments are further strengthening adoption across construction and industrial sectors.

The renewable energy-based steel production segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the renewable energy-based steel production segment is predicted to witness the highest growth rate, driven by electric arc furnace operators directly powering steelmaking with renewable power purchase agreements and green

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electricity tariffs, delivering near-zero scope 2 emissions at significantly lower capital investment than full hydrogen direct reduction conversion. Growing renewable electricity grid availability and declining renewable power purchase agreement prices are improving renewable-powered EAF economics. Carbon certificate programs validating renewable electricity-based steel decarbonization are generating corporate customer procurement premiums supporting investment returns.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share, due to the world's most stringent carbon pricing framework creating the strongest economic case for green steel investment, substantial government co-investment in hydrogen-based steelmaking transformation, and leading corporate customer demand. Swedish steelmaker SSAB AB's HYBRIT fossil-free steel production initiative represents the world's most advanced green steel commercialization program. EU Innovation Fund grants are financing hydrogen direct reduction steel projects at ArcelorMittal, thyssenkrupp AG, and Voestalpine AG.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to massive steel production volumes in China, South Korea, Japan, and India creating large addressable decarbonization markets, growing renewable energy availability enabling green hydrogen production, and emerging government low-carbon steel mandates. China's carbon neutrality commitment is compelling state steel enterprises to pilot hydrogen direct reduction projects. South Korea's POSCO Holdings is investing substantially in hydrogen steelmaking technology development targeting commercial deployment within the forecast period.

Key players in the market

Some of the key players in Green Steel Market include SSAB AB, ArcelorMittal, Tata Steel, Thyssenkrupp AG, POSCO Holdings, Nucor Corporation, Voestalpine AG, HBIS Group, JFE Steel Corporation, China Baowu Steel Group, Salzgitter AG, JSW Steel, Hyundai Steel, Liberty Steel Group, Outokumpu, United States Steel Corporation, EVRAZ plc, and Gerdau S.A..

Key Developments:

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In March 2026, ArcelorMittal initiated construction of its Hamburg DRI-EAF project, a key green steel transformation initiative focused on hydrogen-based direct reduced iron production, strengthening its decarbonization roadmap and positioning within Europe's low-emission steel manufacturing ecosystem.

In February 2026, Voestalpine AG approved full-scale investment in its greentec steel program, deploying electric arc furnace technology at its Linz facility, aiming to reduce carbon emissions by 30% by 2027 while enhancing sustainable steel production capabilities.

In January 2026, SSAB AB delivered its first commercial-scale HYBRIT fossil-free steel volumes to Volvo Cars under a long-term supply agreement, marking a major milestone in green steel commercialization and accelerating low-carbon material adoption in the automotive sector.

Product Types Covered:

- Flat Steel
- Long Steel
- Specialty Steel
- Structural Steel
- Other Product Types

Energy Sources Covered:

- Renewable Energy-based Steel Production
- Hydrogen-based Energy Systems
- Hybrid Energy Systems

Production Technologies Covered:

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Hydrogen-based Direct Reduced Iron (DRI)

Electric Arc Furnace (EAF)

Carbon Capture, Utilization & Storage (CCUS) Integrated Steelmaking

Smelting Reduction Technologies

Applications Covered:

Infrastructure Development

Renewable Energy Projects

Electric Vehicles Manufacturing

Industrial Equipment

End Users Covered:

Automotive

Construction

Energy & Power

Industrial Machinery

Shipbuilding

Regions Covered:

North America

United States

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- Canada
- Mexico

Europe

- United Kingdom
- Germany
- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia

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- Indonesia
- Thailand
- Malaysia
- Singapore
- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel

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- Rest of Middle East
- Africa
  - South Africa
  - Egypt
  - Morocco
  - Rest of Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

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customization options:

- Company Profiling
  - Comprehensive profiling of additional market players (up to 3)
  - SWOT Analysis of key players (up to 3)
- Regional Segmentation
  - Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)
- Competitive Benchmarking
  - Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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