

# Green steel Market is growing at a CAGR of 113.6% and is projected to reach \$364.5 billion by 2032

*Increased oil and gas prices, particularly in Europe and developing economies in Asia-Pacific, have negatively impacted industrial production.*

WILMINGTON, DE, UNITED STATES, March 6, 2025 /EINPresswire.com/ -- The global [green steel market](#) has witnessed remarkable growth over the past few years. In 2022, the market was valued at approximately \$200 million and is projected to reach \$364.5 billion by 2032, exhibiting a staggering compound annual growth rate (CAGR) of 113.6% from 2023 to 2032. The growing emphasis on reducing carbon emissions, achieving sustainability goals, and promoting environmentally friendly industrial practices has played a significant role in driving the expansion of the green steel industry.

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Green steel is a revolutionary innovation in the steel industry, designed to minimize carbon emissions and reliance on fossil fuels. Traditional steel production is one of the highest carbon-emitting industrial processes, accounting for around 7-9% of global CO<sub>2</sub> emissions. Green steel is produced using green hydrogen, which is derived from renewable energy sources such as wind, solar, and hydropower, eliminating the need for fossil fuels. As governments and businesses worldwide prioritize sustainability, the demand for green steel is increasing rapidly.

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The surge in awareness regarding environmentally sustainable production methods has led to a shift in industrial practices. Many companies are now investing in greenfield projects and forming strategic partnerships to transition toward green steel manufacturing. Government support has been a key driver in accelerating the growth of this market. Policies promoting decarbonization, subsidies for renewable energy projects, and stringent carbon regulations have encouraged businesses to adopt greener alternatives.

For instance, the Indian government launched the National Hydrogen Mission in 2021, aimed at

promoting the use of green hydrogen across various industries, including steel manufacturing. Similarly, BMW announced its collaboration with H2 Green Steel in October 2021 to use green steel in its automobiles, targeting a 95% reduction in greenhouse gas emissions by 2025.

Various countries and organizations have initiated projects aimed at promoting green steel production. In Europe, projects such as HYBRIT and H2 Greensteel are leading the way in transitioning from fossil-fuel-based steel production to hydrogen-based methods. In the United States, companies like Boston Metal, an MIT spin-off, are pioneering direct electrolysis technology to extract iron from ore using electricity from renewable sources, further ensuring zero-emission steel production.

The Green Steel for Europe initiative, funded by the European Union, is another milestone in fostering a sustainable steel industry. This project involves a consortium of 12 partners across seven European countries, including research institutions, universities, and steel manufacturers. It focuses on developing innovative technologies like hydrogen-based direct reduction and carbon capture and storage (CCS) to minimize emissions.

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The rapid pace of urbanization worldwide has led to increased demand for steel in construction, infrastructure, and industrial applications. With the global population projected to increase by two billion by 2040 and urban populations expected to grow by over 40%, the need for sustainable steel solutions has never been greater. Green steel is increasingly being used in residential and commercial construction, ensuring eco-friendly infrastructure development.

Moreover, green steel production technologies, such as hydrogen direct reduction (HDR) and molten oxide electrolysis (MOE), have gained traction. These low-carbon methods significantly reduce the carbon footprint compared to traditional blast furnace-based steel production. Additionally, electric arc furnaces (EAF), which rely on recycled scrap steel, have emerged as an effective way to cut emissions and energy consumption.

Despite its promising growth, the green steel market faces several challenges. The high production cost associated with green steel remains a major hurdle. The reliance on renewable energy sources, the cost of electrolysis, and the efficiency of green hydrogen production are factors that contribute to the elevated price of green steel compared to traditional steel.

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The global economic landscape has also posed challenges. The COVID-19 pandemic initially disrupted industrial activities, causing a temporary decline in demand for green steel. However, as industries recovered, inflation emerged as a new obstacle. The ongoing Ukraine-Russia conflict has led to volatility in raw material prices, affecting green steel production costs. Additionally, the surge in oil and gas prices has had a negative impact on industrial production, particularly in Europe and Latin America. However, China and India have continued to perform relatively well in the market.

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The green steel market is segmented based on type, end-user industries, and geographical regions.

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Electric Arc Furnaces (EAF):

EAF technology primarily relies on recycled scrap steel, reducing carbon emissions significantly.

Expected to experience the [highest CAGR](#) during the forecast period due to increased adoption.

Molten Oxide Electrolysis (MOE):

MOE is a cutting-edge method for producing carbon-free metals.

It offers the potential for CO<sub>2</sub>-free steel production, making it a promising technology for the future.

In 2020, MOE accounted for the largest revenue share in the market.

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Rising demand for sustainable buildings and infrastructure projects is driving the adoption of green steel in the construction sector.

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Automakers are increasingly shifting to green steel to meet carbon neutrality goals.

Companies like Volvo have committed to using 100% green steel by 2050 under the SteelZero

initiative.

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The electronics sector is exploring green steel for sustainable manufacturing processes.

Other industries, including heavy machinery and shipbuilding, are gradually adopting green steel technologies.

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North America (U.S., Canada, Mexico):

Increasing investment in sustainable steel technologies.

Europe (Germany, UK, France, Sweden, Rest of Europe):

Holds the highest market share, driven by regulatory support and significant green steel initiatives.

Eastern Europe, particularly Bulgaria, Romania, and Slovakia, is witnessing increasing investments in infrastructure, further boosting demand.

Asia-Pacific (China, Japan, South Korea, India, Rest of Asia-Pacific):

Rapid industrialization and urbanization are key growth drivers.

India and China are leading the way in green steel adoption.

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Several prominent companies are shaping the global green steel market through innovation, strategic partnerships, and capacity expansions. Key players include:

ArcelorMittal

Green Steel Group

H2 Green Steel

Emirates Steel

Jindal Steel and Power

JFE Steel

Nippon Steel

POSCO International

U.S. Steel Corporation

Nucor Corporation

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H2 Green Steel partnered with GreenIron H2 in September 2022 to enhance recycling and emission reduction at its Swedish plant.

Hitachi Energy invested in H2 Green Steel in June 2022 to develop energy solutions.

BMW Group collaborated with H2 Green Steel in August 2022 for CO<sub>2</sub>-reduced steel procurement.

Jindal Steel and Power expanded its green steel plant in Odisha, India, to meet the increasing demand.

United States Steel Corp. and SunCoke Energy signed an agreement in June 2022 to establish a new green steel manufacturing facility in the U.S.

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