

The Global Market for Green Steel 2023-2033

<https://marketpublishers.com/r/GFDCFE9986C9EN.html>

Date: August 2023

Pages: 128

Price: US\$ 1,250.00 (Single User License)

ID: GFDCFE9986C9EN

Abstracts

Steel is the most commonly used metal globally. There is a high environmental cost associated with traditional steelmaking, with greenhouse gas (GHG) emissions from steelmaking account for an estimated 8-9% of the total global fossil and industrial emissions. The industry is seeking to develop more environmentally friendly production processes and products, driven by net-zero emission targets set by governments and industries. The steel industry is facing a significant challenge s regarding carbon emission reduction, resulting in the development of green steel.

Green steel refers to steel produced through more sustainable and low-carbon methods resulting in significantly lower lifetime emissions compared to conventional steelmaking. Key production routes include use of hydrogen direct reduced iron, renewable energy, electrolysis, and carbon capture and storage.

Motivation for green steel is to lower the carbon footprint of steel production, which accounts for 7-9% of global carbon emissions. The market is growing and Thyssenkrupp AG recently received a 2 billion euros package of state subsidies from the German government for its proposed green steel production. Many major steel producers have green steel strategies and large scale production in the pipeline. By 2033, estimates project green steel could surpass 230 million tons as costs decrease and policy incentives align.

Report contents include:

Opportunities and challenges for green steel.

The role of hydrogen in green steel production.

Analysis of green steel production processes.

Hydrogen Direct Reduced Iron (DRI)

Electrolysis

Carbon Capture and Storage/Use

Biochar replacing coke

Hydrogen Blast Furnace

Renewable energy powered processes

Flash ironmaking

Hydrogen Plasma Iron Ore Reduction

Ferrous Bioprocessing

Microwave Processing

Analysis of advanced materials in green steel.

Composite electrodes

Solid oxide materials

Hydrogen storage metals

Carbon composite steels

Coatings and membranes

Sustainable binders

Iron ore catalysts

Biosteel metallics

Carbon capture materials

Waste gas utilization

Market analysis including prices, plants, market maps, SWOT analysis, market trends and opportunities, recent industry developments and innovations, market growth drivers, market challenges and end-use industries including automotive, construction, machinery, electronics etc.

Global market revenues, historical and forecast to 2033, segmented by end-use industry and region.

44 company profiles. Company profiles include production processes, planned capacities, collaborations and agreements, future strategies. Companies profiled include ArcelorMittal, Blastr, Boston Metal, GravitHy, H2 Green Steel, Nippon Steel, SSAB and Thyssenkrupp.

Contents

1 RESEARCH METHODOLOGY

2 LIST OF ACRONYMS

3 INTRODUCTION

3.1 Current Steelmaking processes

3.2 What is green steel?

3.2.1 Decarbonization target and policies

3.2.1.1 EU Carbon Border Adjustment Mechanism (CBAM)

3.2.2 Advances in clean production technologies

3.2.3 Production technologies

3.2.3.1 The role of hydrogen

3.2.3.2 Comparative analysis

3.2.3.3 Hydrogen Direct Reduced Iron (DRI)

3.2.3.4 Electrolysis

3.2.3.5 Carbon Capture, Utilization and Storage (CCUS)

3.2.3.6 Biochar replacing coke

3.2.3.7 Hydrogen Blast Furnace

3.2.3.8 Renewable energy powered processes

3.2.3.9 Flash ironmaking

3.2.3.10 Hydrogen Plasma Iron Ore Reduction

3.2.3.11 Ferrous Bioprocessing

3.2.3.12 Microwave Processing

3.2.3.13 Additive Manufacturing

3.2.3.14 Technology readiness level (TRL)

3.2.4 Properties

3.3 Advanced materials in green steel

3.3.1 Composite electrodes

3.3.2 Solid oxide materials

3.3.3 Hydrogen storage metals

3.3.4 Carbon composite steels

3.3.5 Coatings and membranes

3.3.6 Sustainable binders

3.3.7 Iron ore catalysts

- 3.3.8 Carbon capture materials
- 3.3.9 Waste gas utilization
- 3.4 Advantages and disadvantages of green steel
- 3.5 Markets and applications

4 THE GLOBAL MARKET FOR GREEN STEEL

- 4.1 Global steel production
 - 4.1.1 Steel prices
 - 4.1.2 Green steel prices
- 4.2 Green steel plants and production, current and planned
- 4.3 Market map
- 4.4 SWOT analysis
- 4.5 Market trends and opportunities
- 4.6 Industry developments, funding and innovation 2022-2023
- 4.7 Market growth drivers
- 4.8 Market challenges
- 4.9 End-use industries
 - 4.9.1 Automotive
 - 4.9.1.1 Market overview
 - 4.9.1.2 Applications
 - 4.9.2 Construction
 - 4.9.2.1 Market overview
 - 4.9.2.2 Applications
 - 4.9.3 Consumer appliances
 - 4.9.3.1 Market overview
 - 4.9.3.2 Applications
 - 4.9.4 Machinery
 - 4.9.4.1 Market overview
 - 4.9.4.2 Applications
 - 4.9.5 Rail
 - 4.9.5.1 Market overview
 - 4.9.5.2 Applications
 - 4.9.6 Packaging
 - 4.9.6.1 Market overview
 - 4.9.6.2 Applications
 - 4.9.7 Electronics
 - 4.9.7.1 Market overview
 - 4.9.7.2 Applications

4.10 Global market for demand and revenues 2018-2033

4.10.1 Total market 2018-2033

4.10.1.1 Tons

4.10.1.2 Revenues

4.10.2 By end-use industry

4.10.3 By region

4.10.3.1 North America

4.10.3.2 Europe

4.10.3.3 China

4.10.3.4 India

4.10.3.5 Asia-Pacific (excl. China)

4.10.3.6 Middle East & Africa

4.10.3.7 South America

4.11 Competitive landscape

4.12 Future market outlook

5 COMPANY PROFILES 85 (44 COMPANY PROFILES)

6 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Global Decarbonization Targets and Policies related to Green Steel.
- Table 2. Estimated cost for iron and steel industry under the Carbon Border Adjustment Mechanism (CBAM).
- Table 3. Hydrogen-based steelmaking technologies.
- Table 4. Comparison of green steel production technologies.
- Table 5. Advantages and disadvantages of each potential hydrogen carrier.
- Table 6. CCUS in green steel production.
- Table 7. Biochar in steel and metal.
- Table 8. Hydrogen blast furnace schematic.
- Table 9. Applications of microwave processing in green steelmaking.
- Table 10. Applications of additive manufacturing (AM) in steelmaking.
- Table 11. Technology readiness level (TRL) for key green steel production technologies.
- Table 12. Properties of Green steels.
- Table 13. Coatings and membranes in green steel production.
- Table 14. Advantages and disadvantages of green steel.
- Table 15. Markets and applications: green steel.
- Table 16. Green steel plants, current and planned.
- Table 17. Industry developments and innovation in Green steel, 2022-2023.
- Table 18. Summary of market growth drivers for Green steel.
- Table 19. Market challenges in Green steel.
- Table 20. Supply agreements between green steel producers and automakers.
- Table 21. Applications of green steel in the automotive industry.
- Table 22. Applications of green steel in the construction industry.
- Table 23. Applications of green steel in the consumer appliances industry.
- Table 24. Applications of green steel in machinery.
- Table 25. Applications of green steel in the rail industry.
- Table 26. Applications of green steel in the packaging industry.
- Table 27. Applications of green steel in the electronics industry.
- Table 28. Global market revenues for Green steel, 2018-2033 (Million Metric Tons).
- Table 29. Global market revenues for Green steel, 2018-2033 (Billions USD).
- Table 30. Global market revenues for Green steel, by end-use industry, 2018-2033 (Billions USD).
- Table 31. Global market revenues for Green steel, by region, 2018-2033 (Billions USD).
- Table 32. Key players in Green steel, location and production methods.

List Of Figures

LIST OF FIGURES

Figure 1. Share of (a) production, (b) energy consumption and (c) CO₂ emissions from different steel making routes.

Figure 2. Transition to hydrogen-based production.

Figure 3. CO₂ emissions from steelmaking (tCO₂/ton crude steel).

Figure 4. CO₂ emissions of different process routes for liquid steel.

Figure 5. Hydrogen Direct Reduced Iron (DRI) process.

Figure 6. Molten oxide electrolysis process.

Figure 7. Steelmaking with CCS.

Figure 8. Flash ironmaking process.

Figure 9. Hydrogen Plasma Iron Ore Reduction process.

Figure 10. Green steel market map.

Figure 11. SWOT analysis: Green steel.

Figure 12. Global market revenues for Green steel, 2018-2033 (Million Metric Tons).

Figure 13. Global market revenues for Green steel, 2018-2033 (Billions USD).

Figure 14. Global market revenues for Green steel, by end-use industry, 2018-2033 (Billions USD).

Figure 15. Global market revenues for Green steel, by region, 2018-2033 (Billions USD).

Figure 16. Global market revenues for Green steel, in North America, 2018-2033 (Billions USD).

Figure 17. Global market revenues for Green steel, in Europe, 2018-2033 (Billions USD).

Figure 18. Global market revenues for Green steel, in China, 2018-2033 (Billions USD).

Figure 19. Global market revenues for Green steel, in India, 2018-2033 (Billions USD).

Figure 20. Global market revenues for Green steel, in Asia-Pacific, 2018-2033 (Billions USD).

Figure 21. Global market revenues for Green steel, in Middle East and Africa, 2018-2033 (Billions USD).

Figure 22. Global market revenues for Green steel, in South America, 2018-2033 (Billions USD).

Figure 23. ArcelorMittal decarbonization strategy.

Figure 24. HYBRIT process schematic.

Figure 25. Schematic of HyREX technology.

Figure 26. EAF Quantum.

I would like to order

Product name: The Global Market for Green Steel 2023-2033

Product link: <https://marketpublishers.com/r/GFDCFE9986C9EN.html>

Price: US\$ 1,250.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GFDCFE9986C9EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970