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# **Green Steel for GX**

Overview of the Consolidated Summary of the Study Group on

Green Steel for Green Transformation

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# Need for GX in the steel industry

- **Decarbonizing the steel industry** is **essential** to achieving a **carbon-neutral society**.
- However, steel industry is a hard-to-abate sector.
- Electric arc furnace (EAF) process alone cannot meet all of the world's demand for steel products.
  - limited supply of steel scrap
  - Some steel products cannot be produced by the conventional EAF process due to impurity elements in steel scrap
- It is necessary to promote GX investment and mitigate CO<sub>2</sub> emissions during iron ore reduction process, while supplying the necessary steel.



Fig. 1 IEA's forecast of global demand for steel by raw material

Iron ore reduction will continue to be necessary due to steel scrap supply constraints.

# Need to visualize GX value

- The value of significantly reducing CO<sub>2</sub> emissions through GX investment (GX value) needs to be recognized by society.
- The cost of steel produced by GX investment (Green steel for GX) is expected to increase significantly at least in the initial stages, while there is no difference in functionality.
- It is important to visualize the GX value based on consumer needs and to support and incentivize the purchase of such products.



Fig. 2 Estimation of raw material and energy costs for 1 ton of steel

References: for raw material and energy prices, Ministry of Finance trade statistics, Electricity Trading Reports, CCS Long-Term Roadmap Study Group materials, Japan Iron and Steel Recycling Institute's website, etc.; for setting raw material and energy volumes, Japan Iron and Steel Federation's website, MFG ROBOTS' website, the World Steel Association's website, etc.

Iron ore steel involving decarbonization measures can be costly.

## Need to ensure consistency with international discussions

- Overseas markets and investors are increasingly demanding disclosure of CO<sub>2</sub> emissions in the supply chain.
- The automotive industry exports its products overseas. The real estate industry has a need to attract foreign investment.
- It is important that Green Steel for GX be internationally recognized as having a low carbon footprint of products (CFP).
- Expert discussions on CFP will take time. Support measures for both the supply and demand sides of Green Steel for GX should be considered and formulated now, with the aim of stimulating demand for Green Steel for GX in a timely, step-by-step manner.



Fig. 2 Concept of support for Green Steel for GX and low CFP steel

Green Steel for GX is steel products that have a significant environmentally favorable impact due to additional direct emission mitigation actions on a company-by-company basis, and that experience a significant price increase compared to general products when the costs associated with these actions are included.

While Green Steel for GX is part of low CFP steel category in the chart above, a consistent framework with CFP needs to be established.

Market expansion policies include priority procurement by the government (e.g., Green Procurement Law) and other support measures for purchasing (incorporate into the subsidy criteria)

Government should outline its policy direction on focused support measures for Green Steel for GX while promoting the use of CFP

### Recommended actions for the public and private sectors

Promoting GX Value and Reflecting It in International Standards	Enhancing the Utilization of CFP for Steel Products
<ul> <li>Facilitate understanding of the significance of GX value both inside and outside Japan. Collaborate with worldsteel and international initiatives.</li> <li>Promote discussion inside and outside Japan on methodologies for evaluating Green Steel for GX as a product with a low CFP.</li> <li>Formulate product-specific CFP calculation rules for steel products and reflecting it in the Japan's CFP guideline. Consider adoption of the rules in building life cycle assessment (LCA) and other governmental policies.</li> </ul>	<ul> <li>Encourage customers to utilize CFP. Enhance the use of steel products with low environmental impact.</li> <li>Promote the development and disclosure of CFP data for steel products.</li> <li>Facilitate discussions on methods for using nonfossil certificates (NFC) with steel products.</li> </ul>

#### **Providing Support to the Demand Side**

- Provide focused support through priority government procurement and the purchasing of Green Steel for GX during the early stages of production.
- Provide incentives for automobile manufacturers through clean energy vehicle (CEV) subsidy program.

#### **Providing Support to the Supply Side**

- Provide support to the supply side, including multi-track technological development, capital investment support, and tax measures.
- Promote **the effective utilization of steel scrap** through collaboration among related businesses.

### Actions taken at this time are of great significance



\*This diagram is intended to raise the awareness of the need for immediate action by all parties concerned. It is not intended to imply that the future actions have already been scheduled according to the diagram.