



Operations & Supply Chain Integration (MBA605)

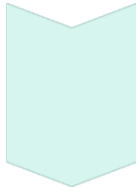
KALYANI FeRRESTA: INDIA'S 1ST GREENSTEEL IS READY!

<i>Afra Muhammad</i>	<i>202412386</i>
<i>Aysha Ahmed</i>	<i>202411803</i>
<i>Reem Musleh</i>	<i>202412500</i>
<i>Salma Abdulkarim</i>	<i>202412448</i>
<i>Lana Altakriti</i>	<i>202420462</i>

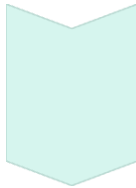
Dr. Maher Itani

Introduction

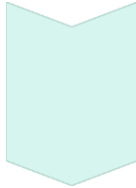
Kalyani FeRRESTA™: India's First Green Steel
Saarloha, under the Kalyani Group, introduced green steel
using scrap and renewable energy to cut emissions.



Aligned with EU climate standards



Faces high costs, longer processing,
low market uptake



Strategic choice: Expand green production
or stick to traditional method





Methods And Strategies Used To Produce Green Steel At Saarloha Plant

Main Focus >> Decarbonization

Goal>> Minimize the carbon emission used to produce steel

- Hydrogen-based Direct Reduction (H-DR)
$$\text{Fe}_2\text{O}_3 + 3\text{H}_2 \rightarrow 2\text{Fe} + 3\text{H}_2\text{O}$$
- Use of Electric Arc Furnace (EAF) technology
- Renewable Energy Utilization

Greenhouse Gas Emissions Categorization by Green Steel Taskforce

Scope 1: Direct emissions from Saarloha's steel plant, including:

- Raw materials like Direct Reduced Iron and Pig Iron
- Fossil fuel use
- Ferroalloy production

Scope 2: Indirect emissions from purchased electricity, mainly from fossil fuel-based grid power.

Scope 3: Indirect emissions in the value chain, such as:

- Raw material extraction
- Transportation
- Product lifecycle impacts



Scope 1 and 2 Emissions Calculations for Steel Production



BF-BOF Emissions

2.32 tons CO₂ per ton of steel, mainly from coke, sinter, and grid power.



EAF Carbon Steel Emissions

Lower emissions with 0.55 tons CO₂ per ton, combining process and electricity use.



EAF Green Steel Emissions

Minimal emissions at 0.029 tons CO₂ per ton with no grid power usage.

Exclusion of Scope 3 Emissions

1

Data Complexity

Scope 3 includes emissions from suppliers, transportation, and product lifecycle, requiring extensive external data.

2

Focus on Control

Scopes 1 and 2 emissions are directly controllable by Saarloha's operations, enabling more effective measurement and reduction.

3

Baseline Establishment

Prioritizing Scopes 1 and 2 allows immediate impact; Scope 3 requires collaboration beyond the company's direct control.



Yes, but mainly in **global markets.**

EU policies like CBAM (2026) and buyers like Ford and Volvo are driving demand.

In India, uptake is slower due to low awareness and price sensitivity.





How Should Anand Parasramka Price The Products?

Product	Pricing	Target Markets	Why?
KALYANI FeRRESTA™	~10–15% premium	EU/US automakers, aerospace, Indian ESG firms	Aligns with CBAM & ESG goals
KALYANI FeRRESTA™ PLUS	~20–30% premium	Net-zero clients, green buildings, governments	Meets carbon neutrality needs

How To Build Client Trust?

1. Use **third-party certification** like **DNV** for product verification.
2. Provide **transparent emissions data** using **GHG Protocol** and **ISO standards**.
3. Educate clients through **workshops and reports** showing carbon savings versus conventional steel

Recommendation for Kalyani Group's Steel Production Investment

Decision Context:

R.K. Goyal must choose between:

1- Traditional Blast Furnace (BF-BOF)

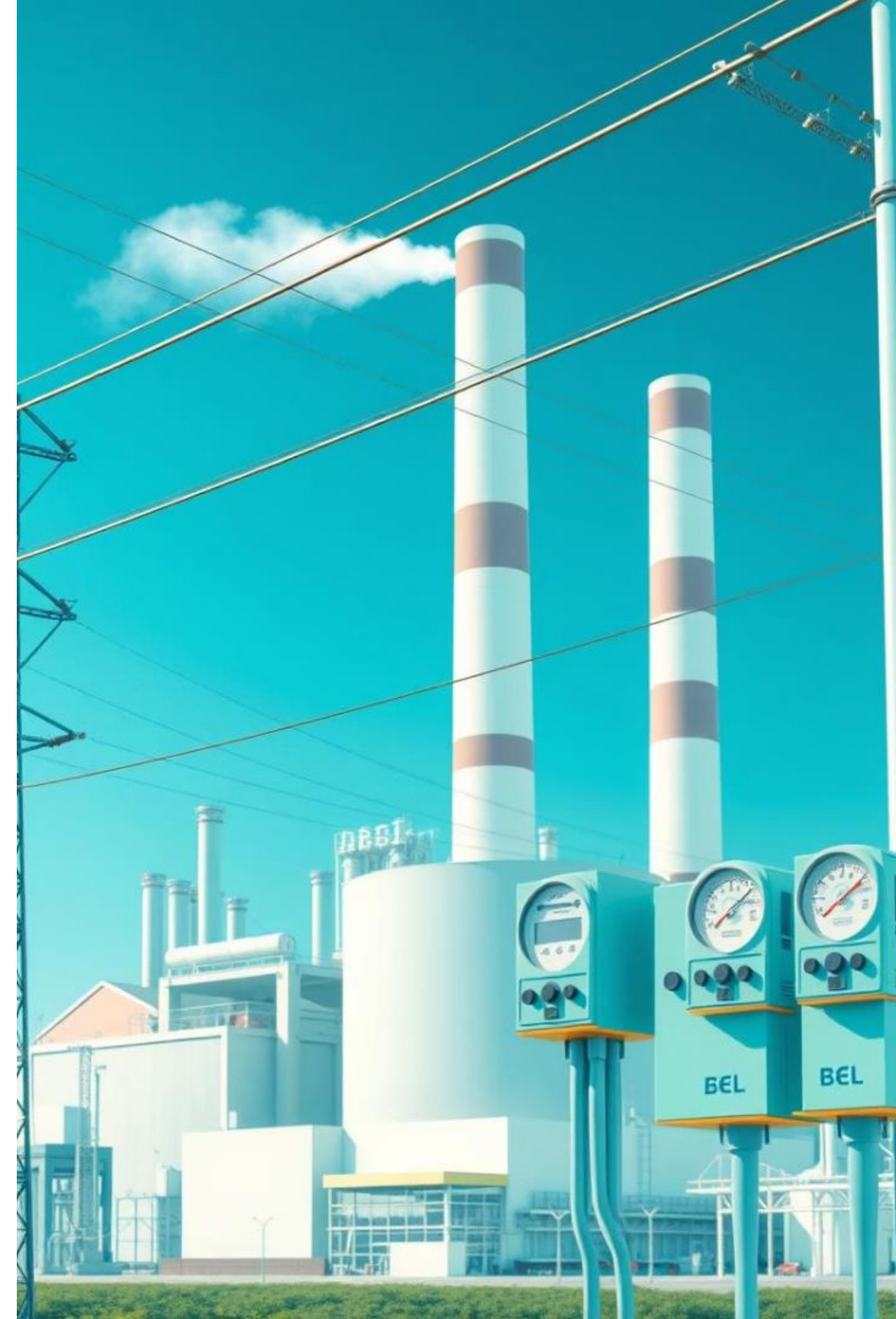
2- Scrap-based Electric Arc Furnace (EAF)



3- Green Hydrogen-based Direct Reduced Iron (DRI) + EAF

WHY!

- Regulatory Alignment
- High Decarbonization Potential
- Scrap Scarcity Risk Mitigation
- Long-Term Strategic Investment
- Innovation & Leadership
- Energy Independence
- Potential for Government Incentives
- Future Cost Competitiveness



Thank you!