iima
International
Iron Metallics Association

Challenges and opportunities for merchant OBMs along the pathway to carbon-neutral steelmaking

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Overview

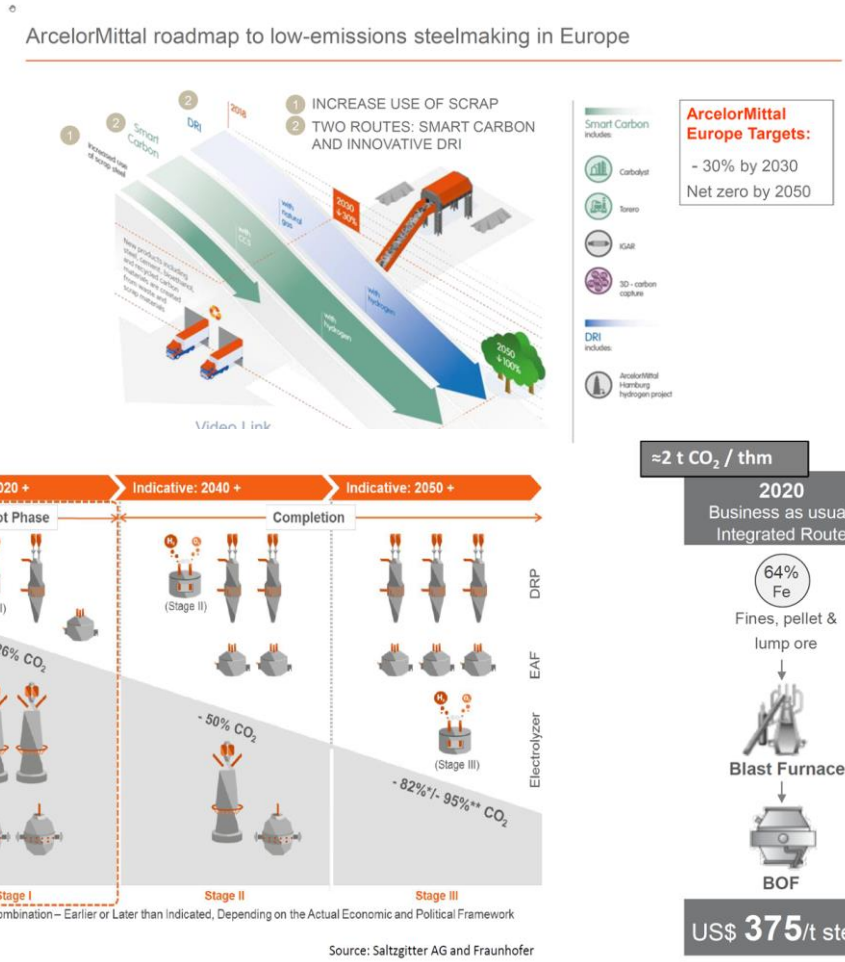
- Introduction to IIMA Whitepapers on the role of OBM's in the pathway to carbon-neutral steelmaking
- Key outcomes from IIMA's analysis of strengths, weaknesses, opportunities and threats
- Concluding remarks

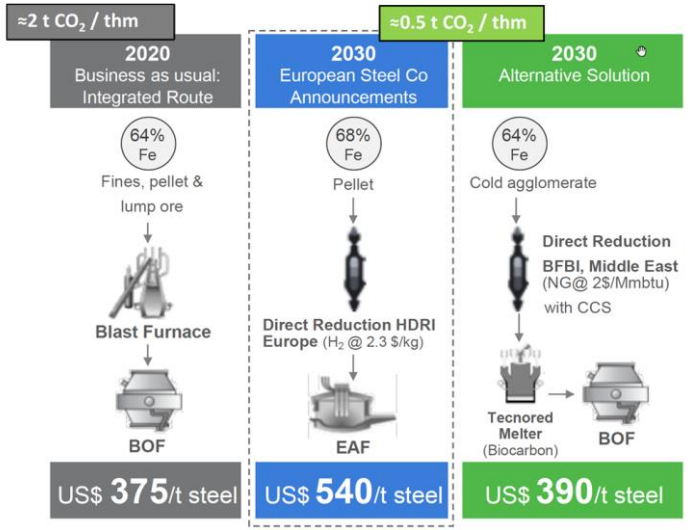
What is IIMA?

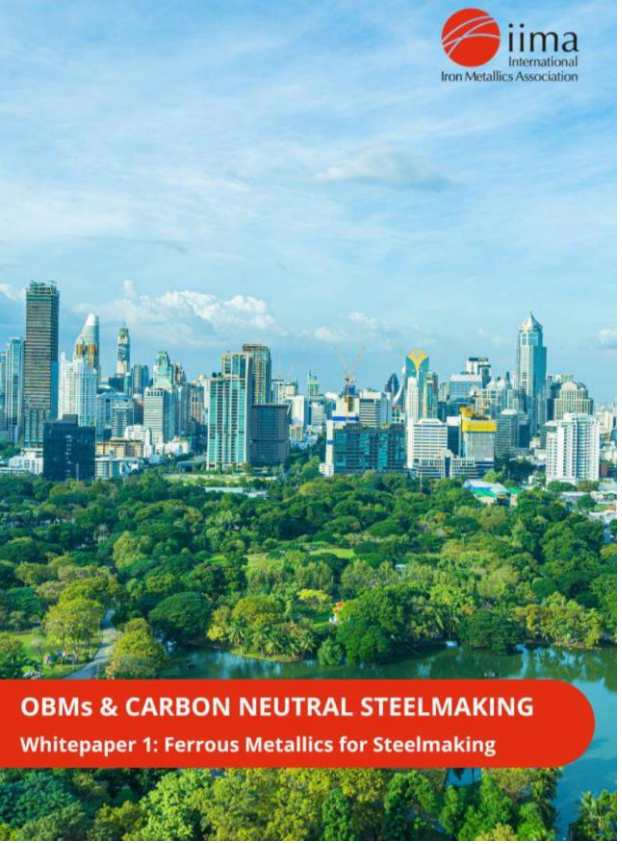
- IIMA is the trade association for the ore-based metallics industry
- Our members account for more than 80% of production and international trade
  - Producers (Pig Iron, HBI, DRI)
  - Traders
  - Associates (raw materials, technology, plant & equipment, logistics)

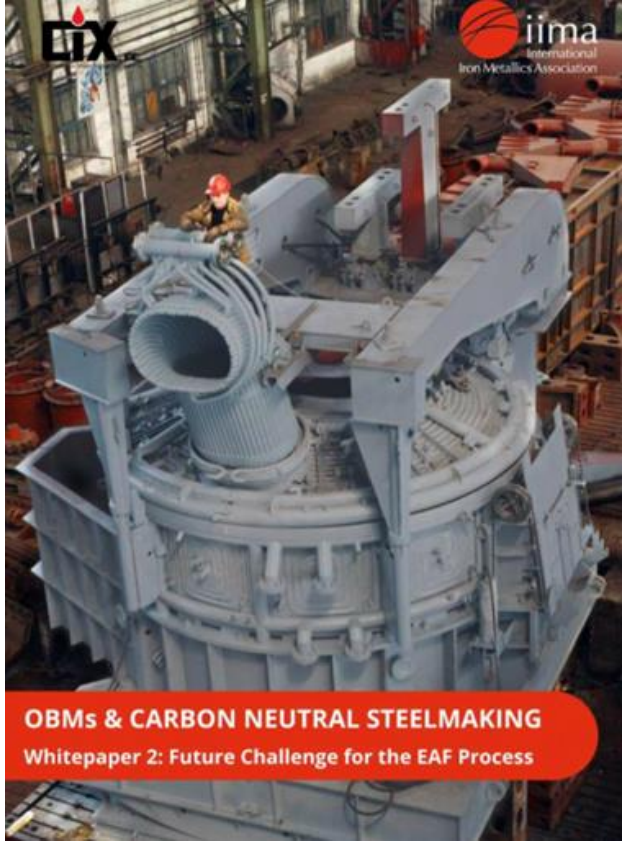
- IIMA is an associate member of **worldsteel** and **ICMM**
- We are an NGO with consultative status with **IMO**

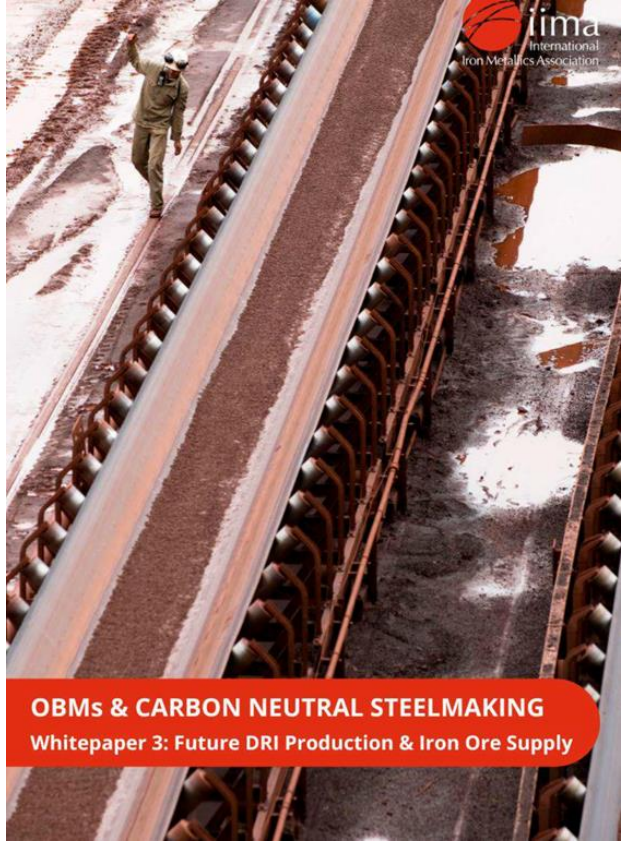
Pathways to carbon neutrality

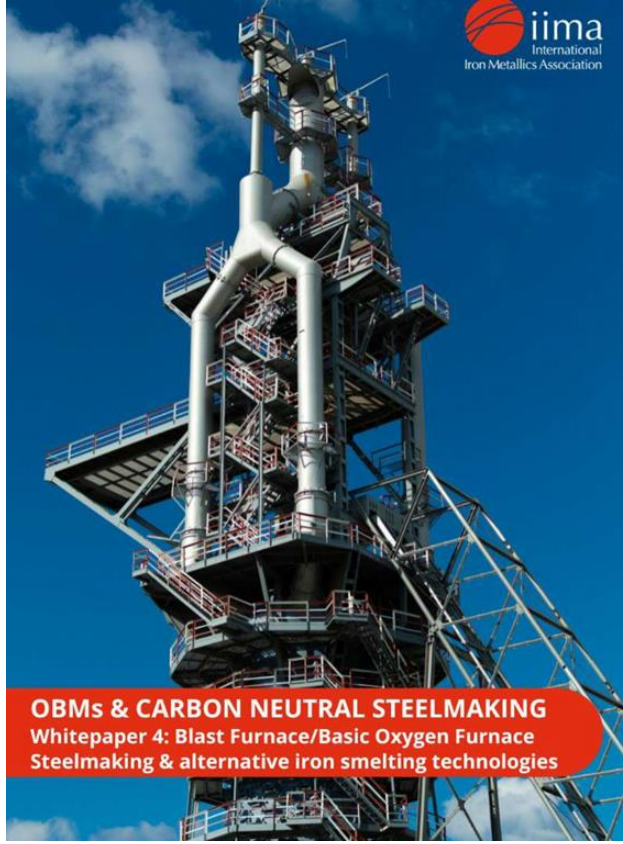












IIMA Whitepapers

Purpose

Our purpose is:

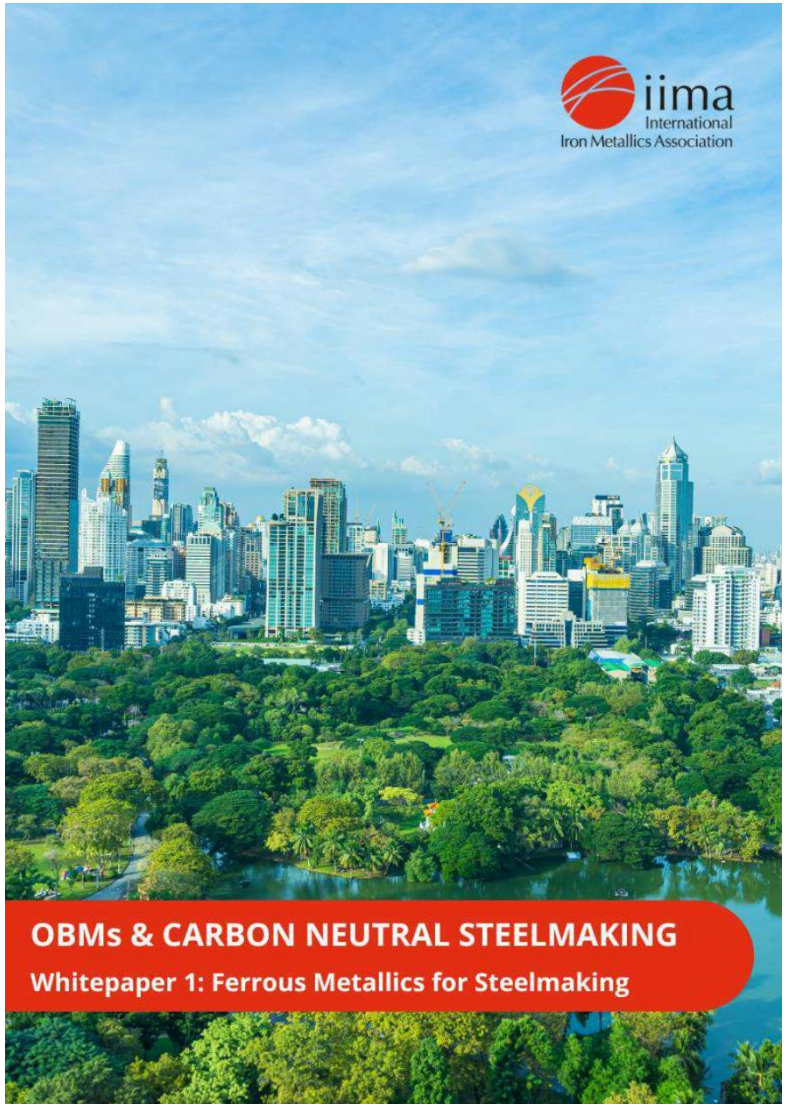
to emphasize the role and benefits of OBMs in and along the pathway to carbon neutral steelmaking;

to facilitate discussion with key stakeholders on issues, weaknesses, threats, and opportunities in the new paradigm where metallics (including scrap) are concerned;

to support IIMA members understanding and response to the issues, threats and opportunities.

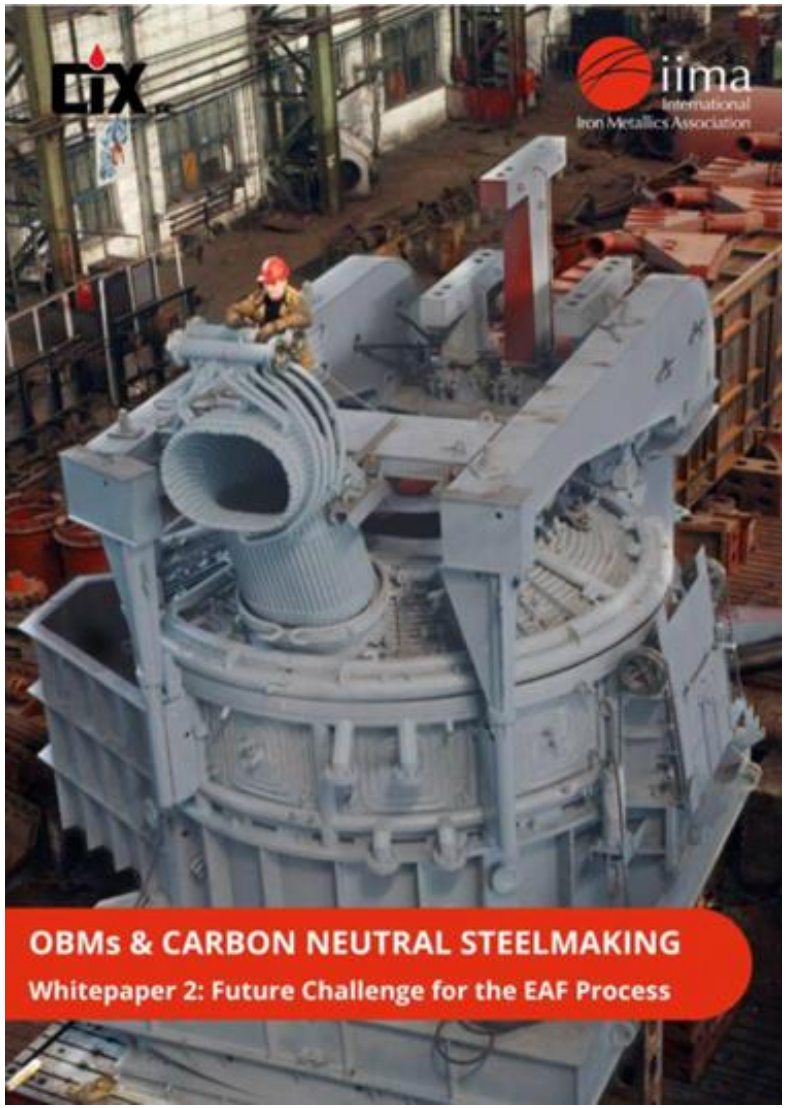
Whitepaper 1 – Ferrous Metallics for Steelmaking

- Overview of ferrous metallics for steelmaking, covering steel scrap and ore-based metallics (OBMs)
- Role of OBMs as scrap supplements rather than scrap substitutes in electric arc furnace (EAF) steelmaking is explained
- OBMs enable realisation of lower CO2 emissions from EAF steelmaking



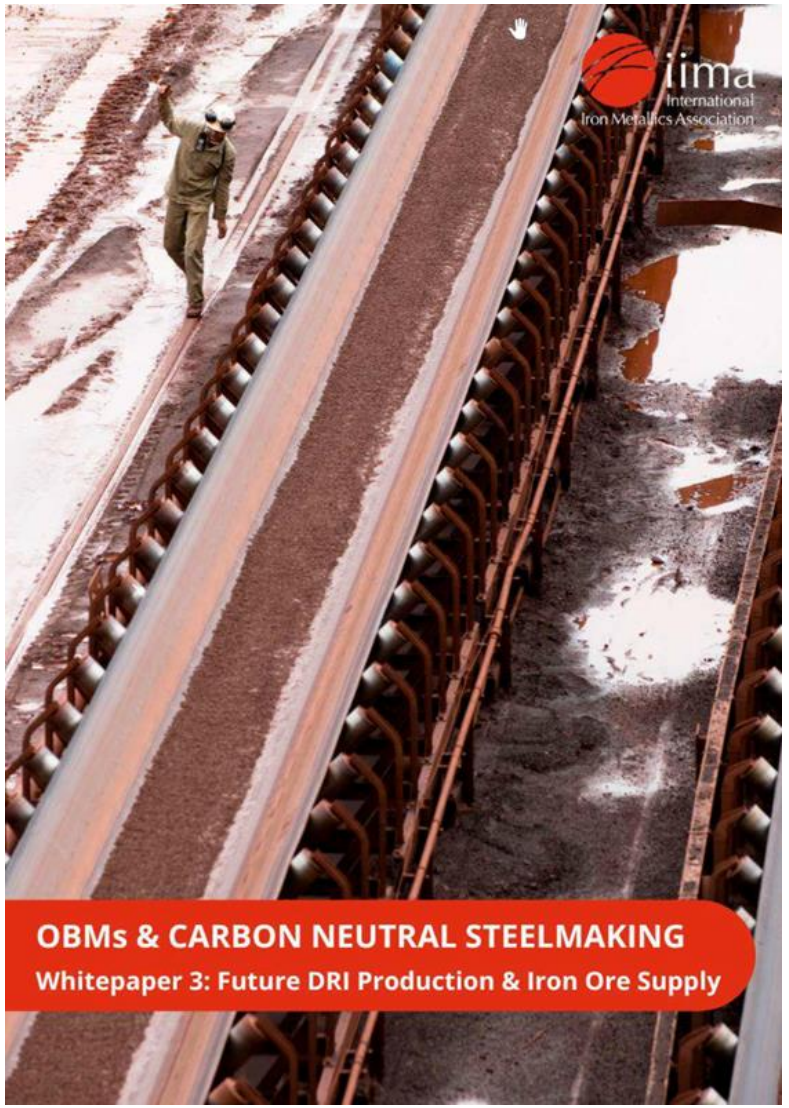
Whitepaper 2 – Future Challenge for the EAF Process

- Acknowledges the importance of the EAF towards achieving carbon-neutral steelmaking and that the future of EAF technology is closely entwined with the selection of raw materials
- Raises the specter of the emerging scrap crisis resulting from increasing amounts of impurities and suggests how this might be addressed
- Brings focus to the role of OBMs and the potential impacts on EAF productivity, yield and efficiency



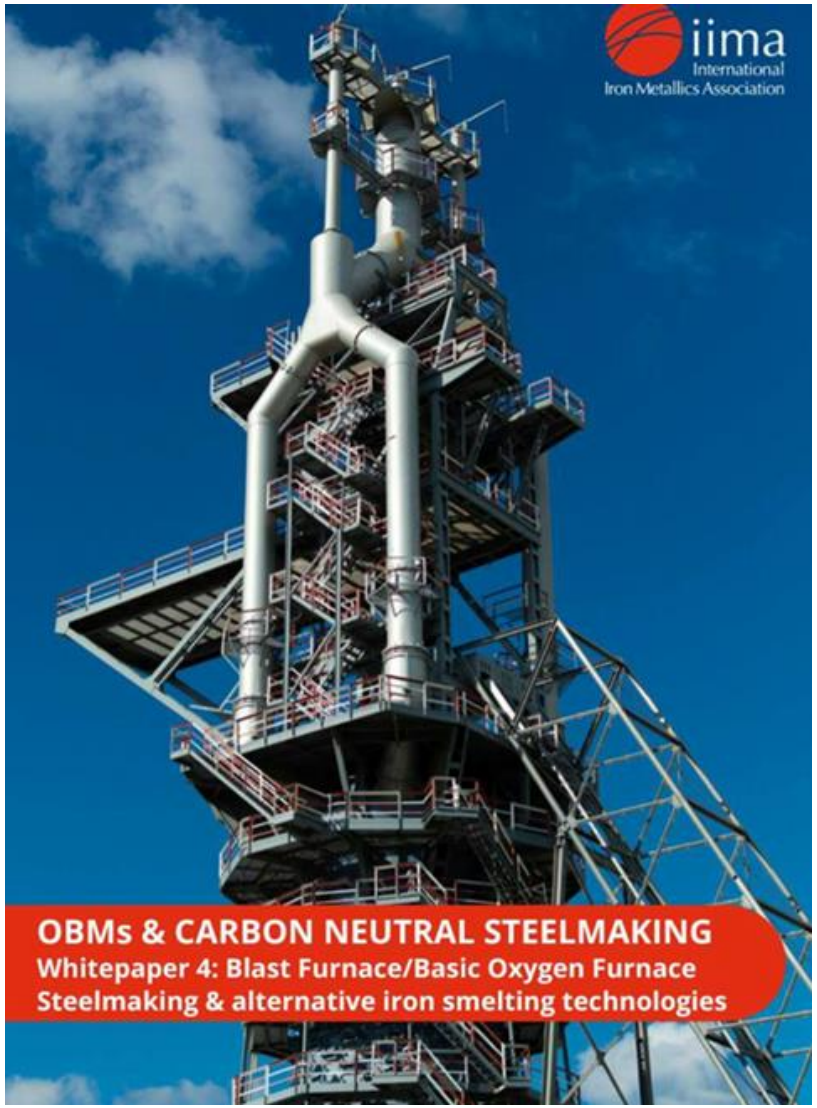
Whitepaper 3 – Future DRI Production and Iron Ore Supply

- Reviews evidence for the progressive shift from the integrated blast furnace / basic oxygen furnace (BF/BOF) steelmaking route to the direct reduction/electric arc furnace route (DR/EAF)
- Examines the longer-term implications for iron ore supply in terms of both quantity and quality
- Discusses implications for maritime regulations arising from the likely changes to the characteristics of hot-briquetted iron (HBI)

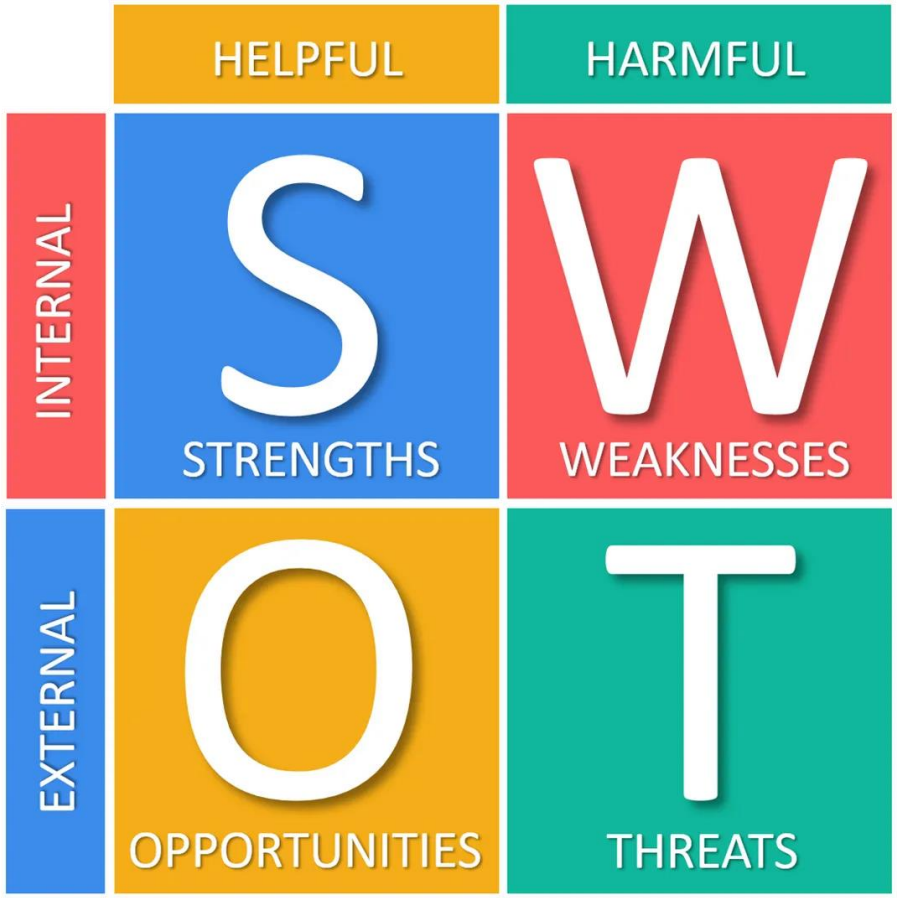


Whitepaper 4: BF/BOF Steelmaking and Alternative Iron Smelting Technologies

- Examines the scope and mechanisms for further reduction of CO2 emissions from the BF/BOF steelmaking processes
- Provides a review of alternative hot metal processes and new technologies and the grounds for their success in reducing CO2 emissions
- The extent to which regional approaches will influence the pattern and progression of change is also examined.



SWOT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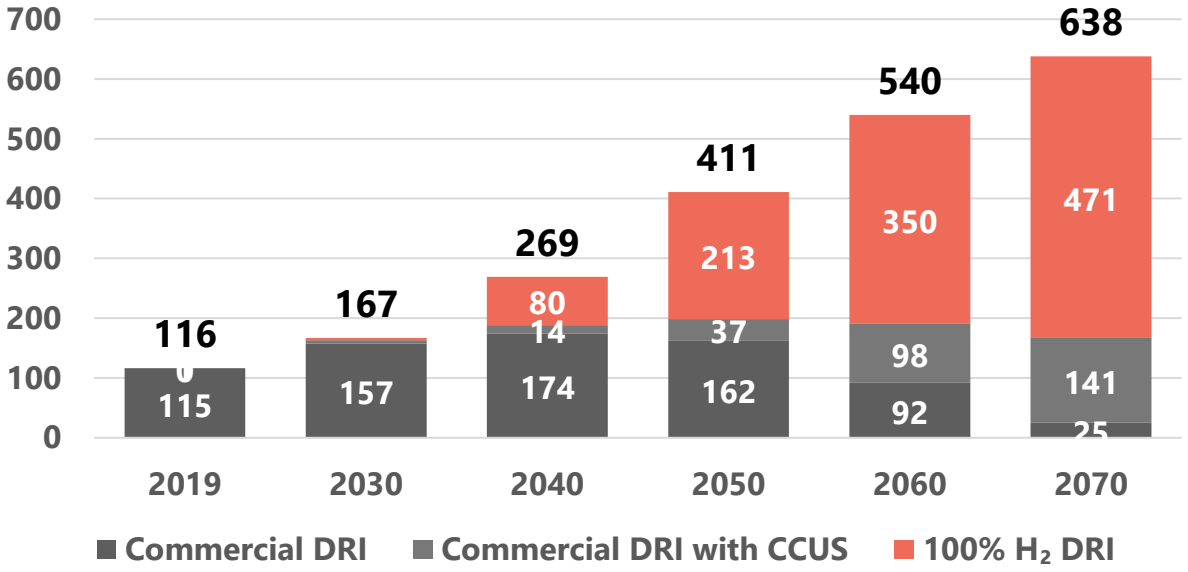
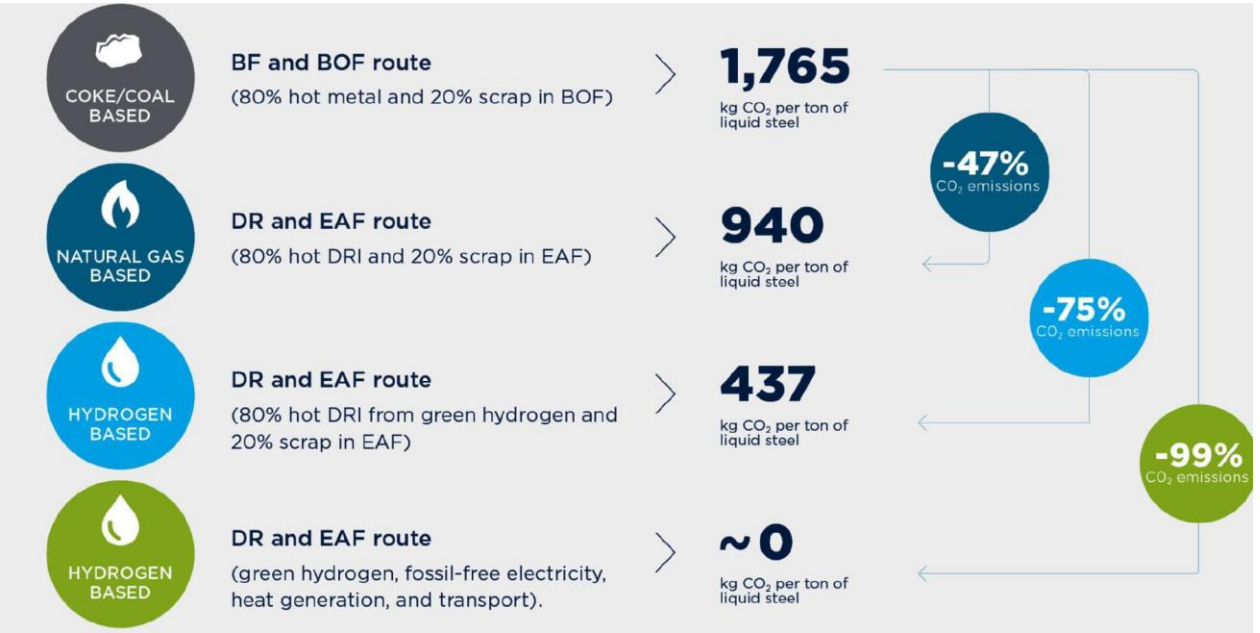
Expanding EAF use and demand for OBMs



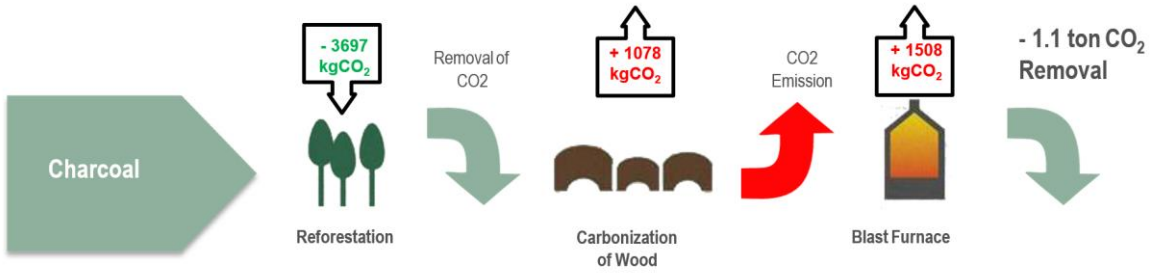
Source: International Energy Agency: Energy Technology Perspectives 2020
SDS = Sustainable Development Scenario

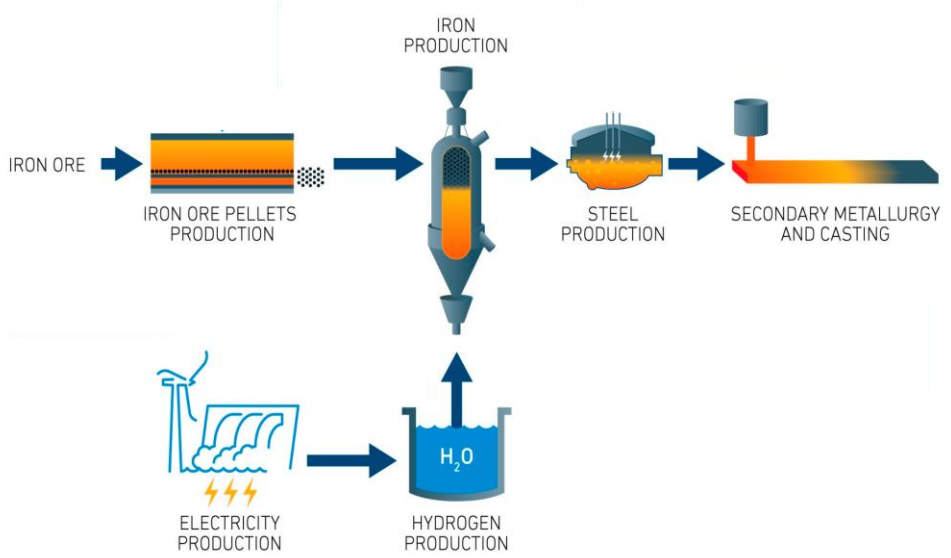
There will be increasing demand for ore-based metallics primarily due to the expansion in electric arc furnace steelmaking.



Source: Dr. Alexander Fleischanderl, Hanspeter Ofner, Johannes Rothberger, Robert Millner, Metals Magazine, 2020,

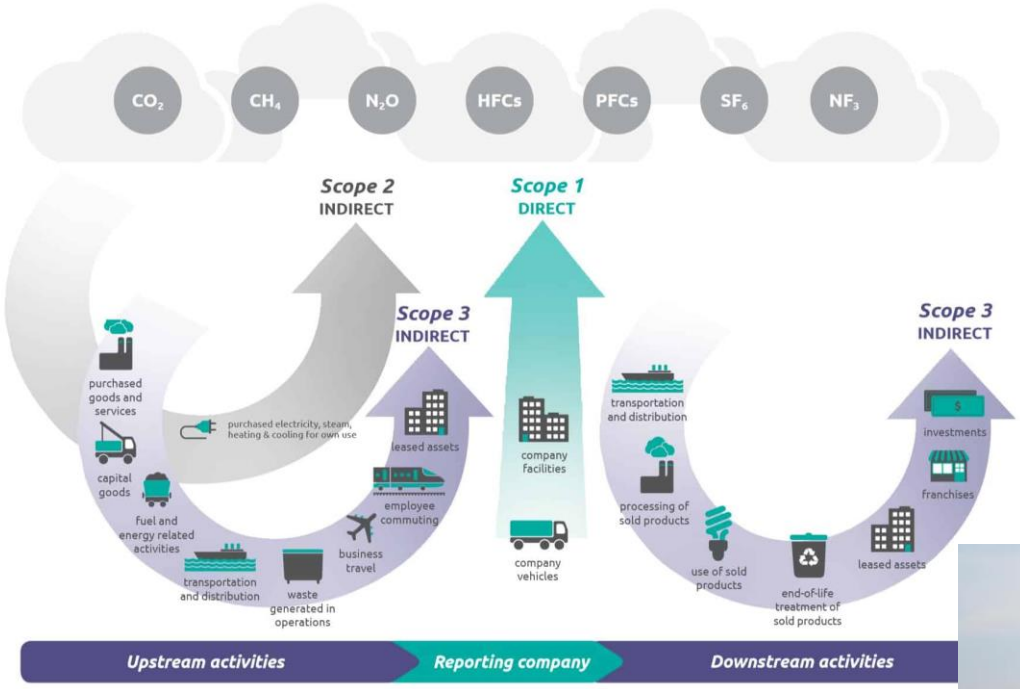
Carbon-neutral production of OBMs is realistic





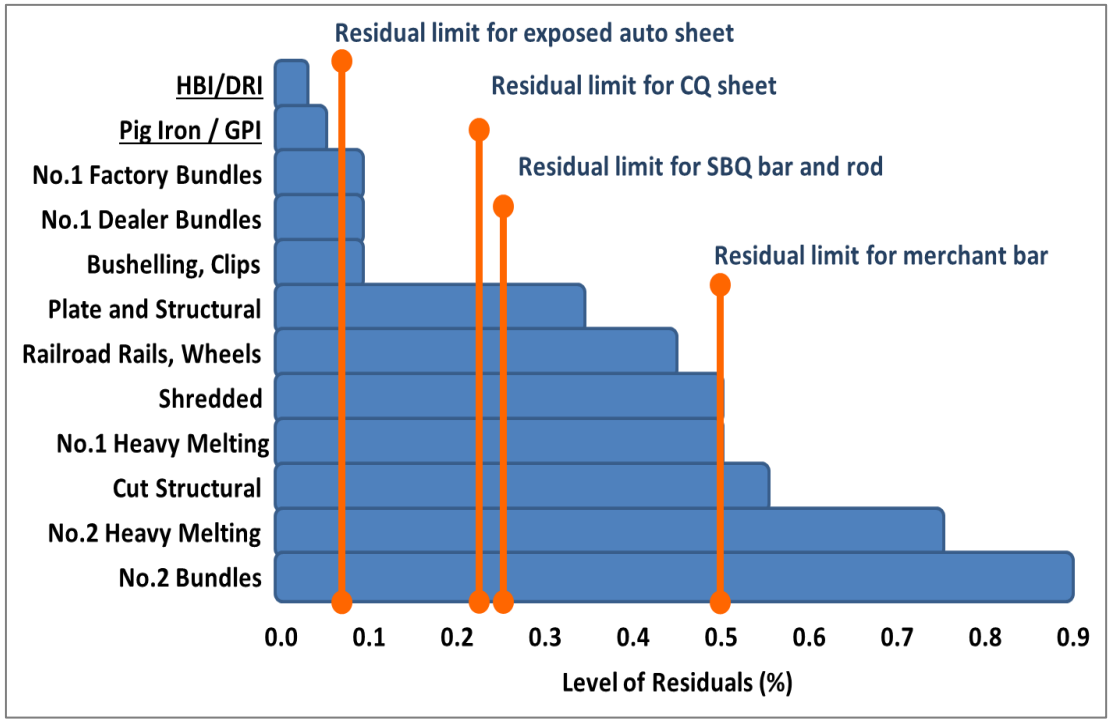
Existing initiatives and technological advancements demonstrate that carbon-neutral production of ore-based metallics is realistic.

Reductions in Scope 3 emissions as important as 1 and 2

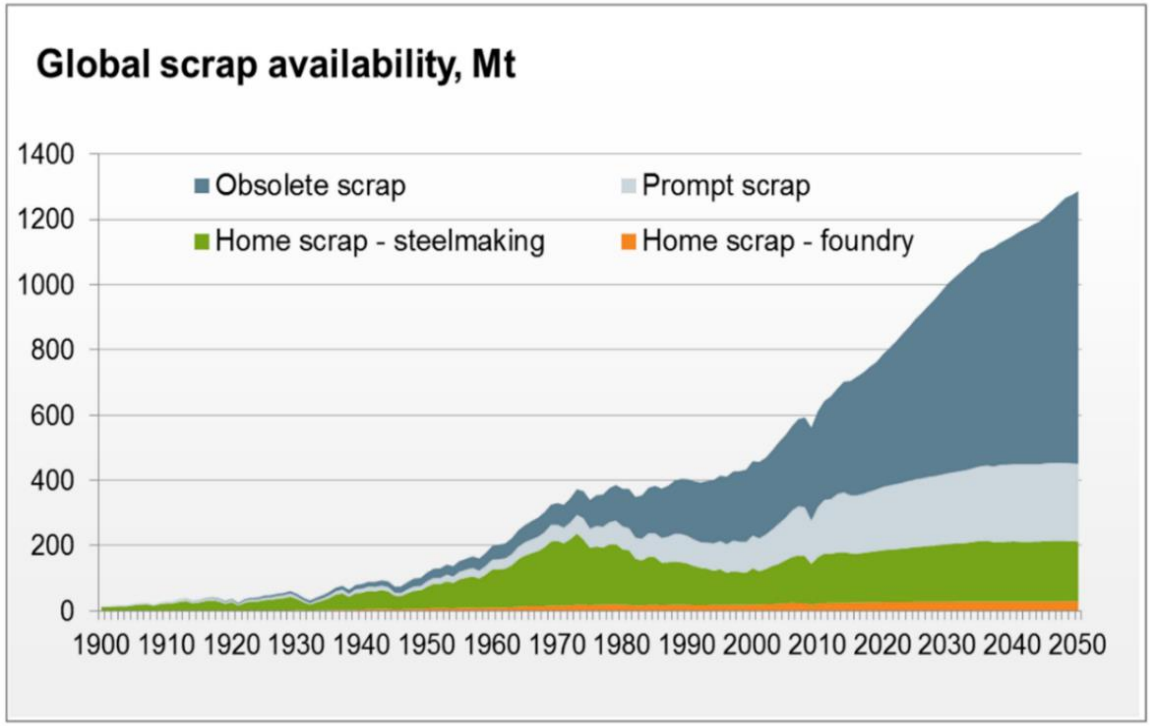


Sustaining the merchant OBMs market will depend on reductions in Scope 3 emissions as much as Scope 1 and 2

OBMs enabling scrap recycling



Source: IIMA

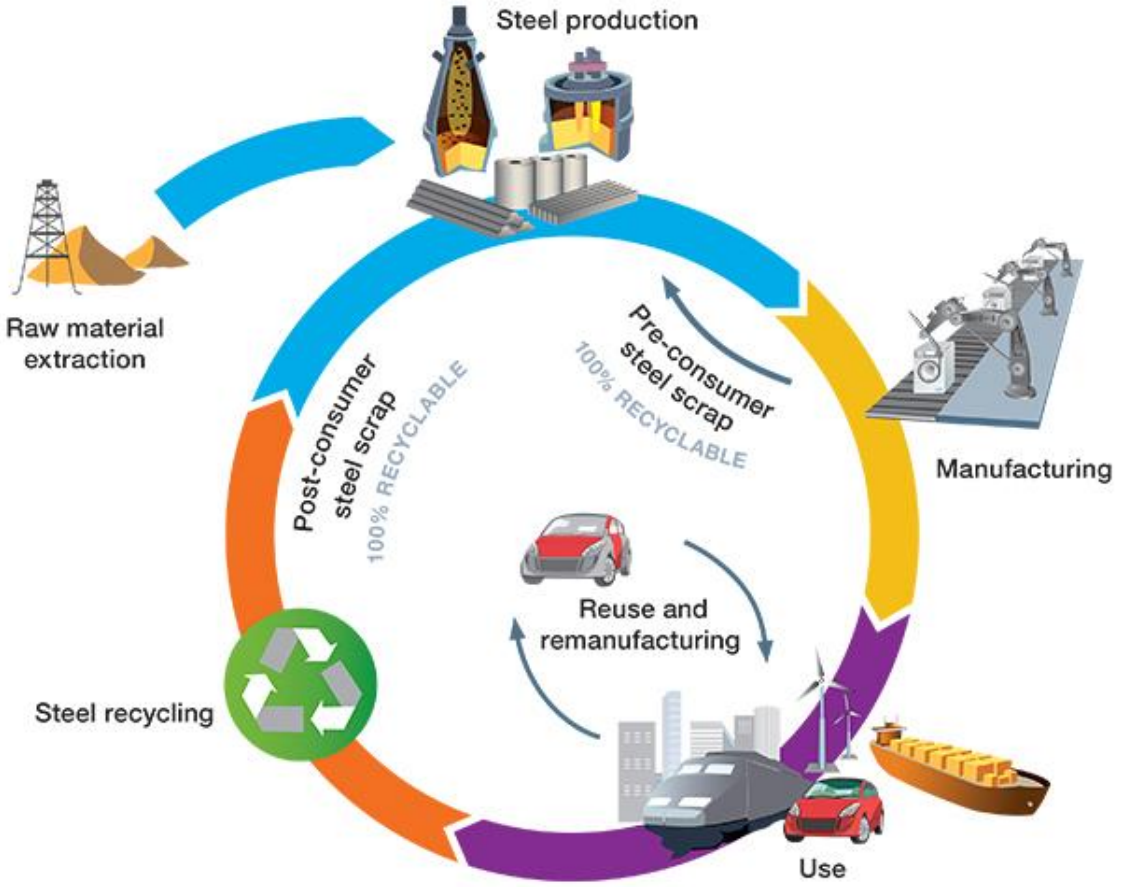


Source: worldsteel

OBM's are enablers of scrap recycling and decarbonisation of steelmaking and in so doing contribute to the circular economy

Collaboration is essential

Creating a carbon-neutral OBM sector requires collaboration throughout the steelmaking supply chain



Next steps

- How can we build on and exploit our strengths to create and capitalise on opportunities and mitigate threats?

- How can we addresses our weaknesses to enhance our ability to capitalise on opportunities and mitigate threats?

- We aim to develop a strategy and action plan to focus on where we can have further impact!

and so…..

The iron & steel value chain is like a super-tanker -it takes a long time to change course….

The roadmap to “carbon-neutral” steelmaking has a timeline of 30-50 years and there are several pathways under active consideration.

To ensure success we see the need for:

- collaboration
- common terminology and standards
- avoidance of polarisation, embracing diversity in solutions to enable efficient use of available resources
- Investment from both public and private institutions

Contact information

Thank you for your attention

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