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Session 6 : problems on set - the bottlenecks blocking scale (and the fixes)

Potential resource and supply chain constraints

Open Forum 2026

2 – 3 June 2026

Cardo Brussels, Autograph Collection

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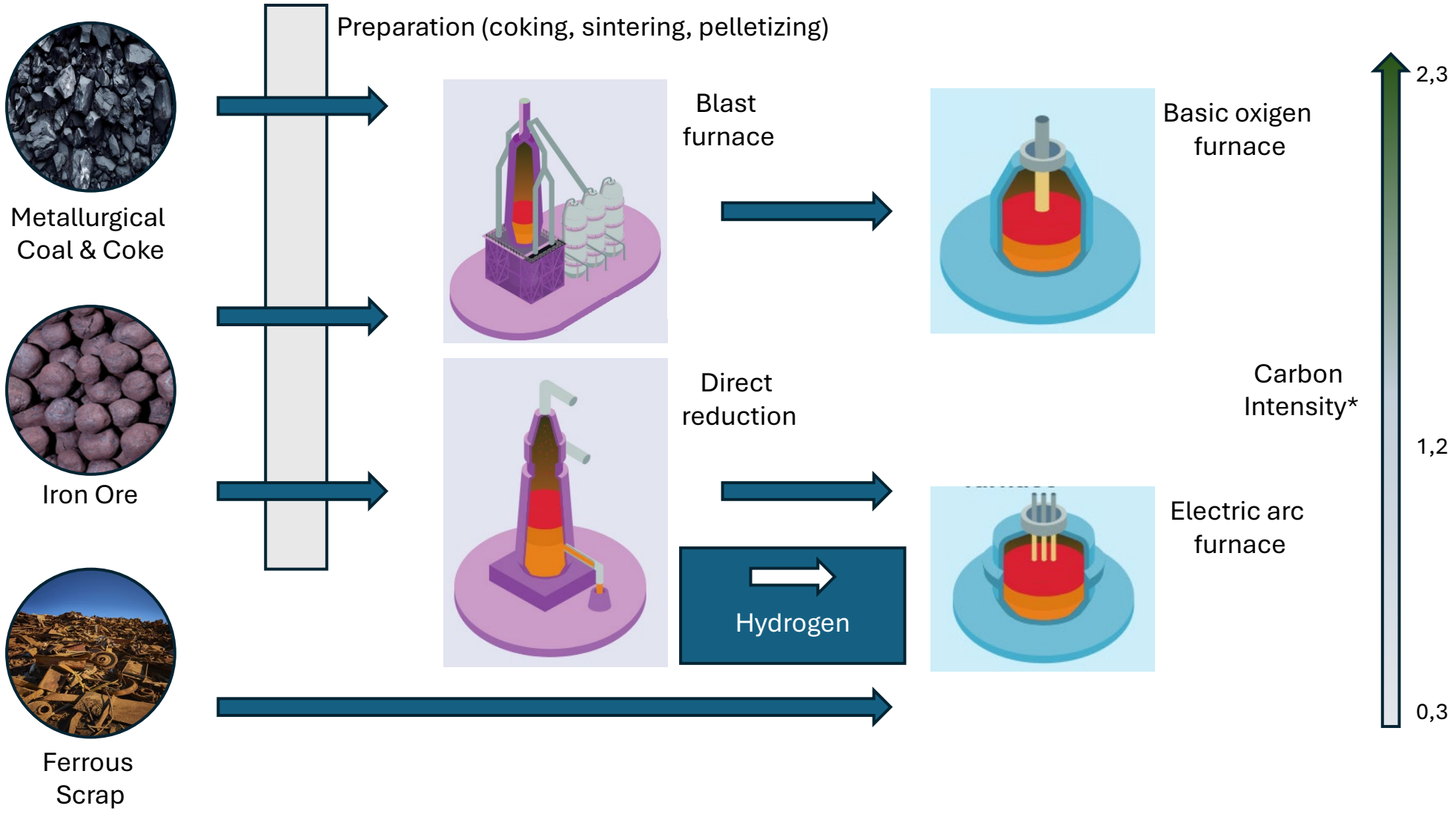
All main steelmaking raw materials are under supply risk



* Tons of Carbon equivalent per ton of steel

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Main trends affecting raw materials

Short term:

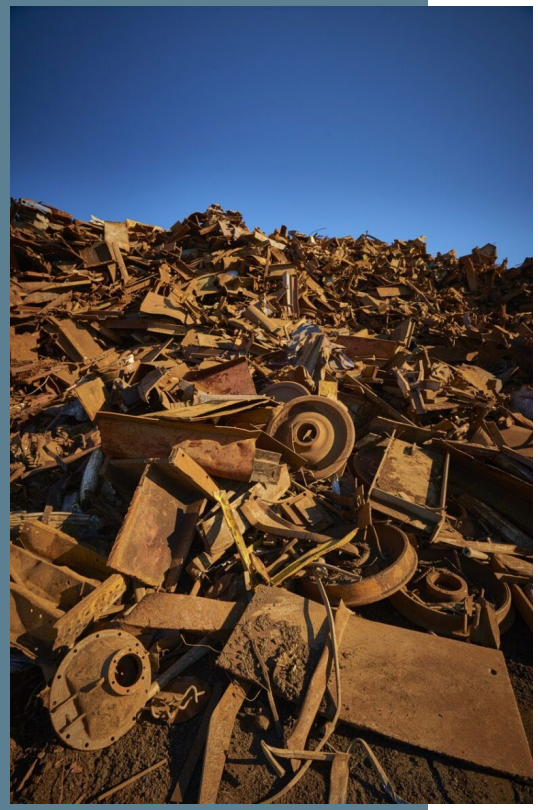
1. The substitution of the blast furnace route by the electric route, leading to increased demand for scrap and scrap substitutes such as DRI and HBI.
2. The increase in iron content in blast furnace feed, aiming to reduce coke rates and, consequently, lower the carbon footprint of operations.

Looking ahead to the long term, we expect:

1. The continued shift toward the electric route.
2. A gradual transition to hydrogen-based processes, as widely anticipated across the industry.
3. Possible development of alternative routes to process lower grade materials.

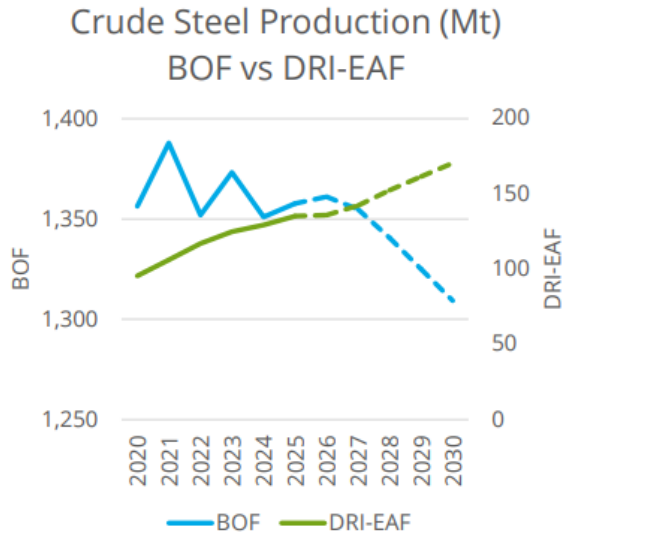
All these transformations are highly capital-intensive and depend on a significant expansion in power generation and transmission infrastructure..

Ferrous Scrap

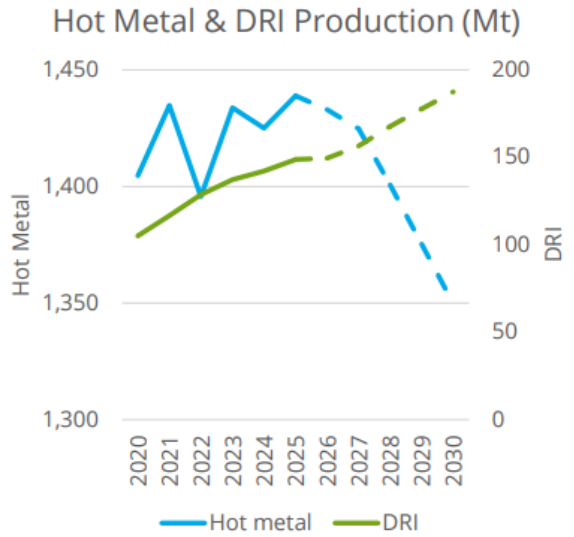


Scrap usage:

1. EAF growth tied to reliable, low-carbon electricity.
2. Increased scrap use in BOF to lower emissions (with supply/quality constraints).
3. Strong DRI/HBI demand driven by need for low-carbon primary production, limited by iron ore quality.

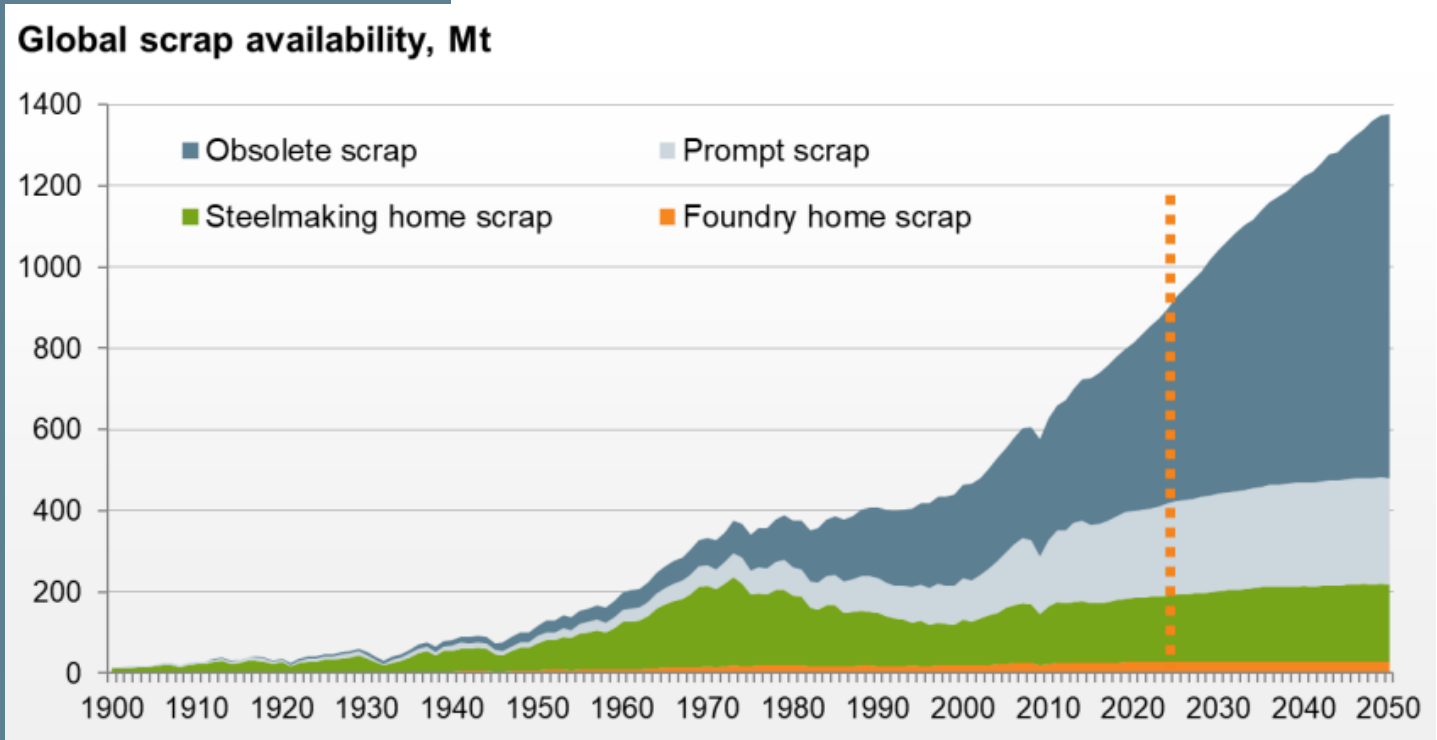


DRI-EAF: derived from DRI production. 1.1t DRI for 1t of steel



Source: CRU

Ferrous Scrap



Source: worldsteel

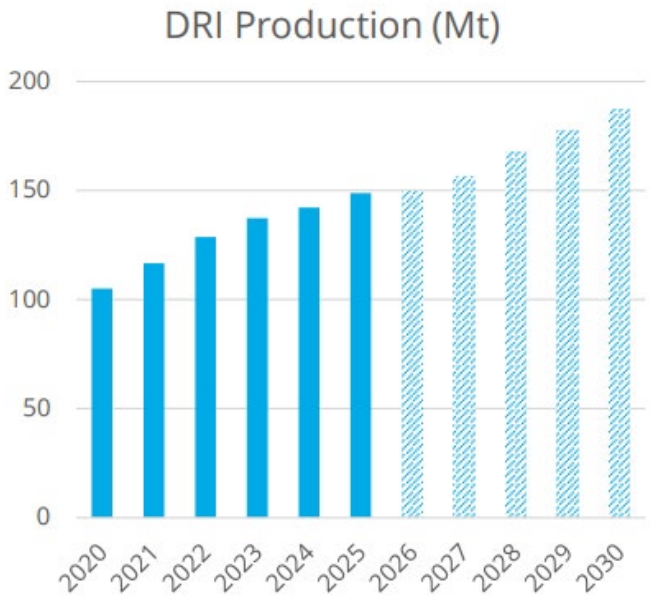
Scrap generation and collection:

1. Scrap supply constrained and regionally concentrated.
2. Export restrictions tightening availability of high-grade scrap.
3. Growth led by obsolete scrap, with rising contamination risks (electrification). Need for better processing and shifting trade toward lower-grade usage.

Iron Ore

Demand

1. In the near term, increase the use of higher iron content burdens (65% Fe) in blast furnaces - optimize coke consumption – reduced carbon intensity.
2. Every decarbonization pathway require higher iron content.
3. The direct reduction route using natural gas linked to EAF production requires minimum iron content of 67% Fe content iron ore pellets.
4. Same grade would be required for future operations using hydrogen.
5. Expansion in DRI-EAF steelmaking (driven by Europe & MENA) is accelerating demand for high-quality DR-grade pellets.



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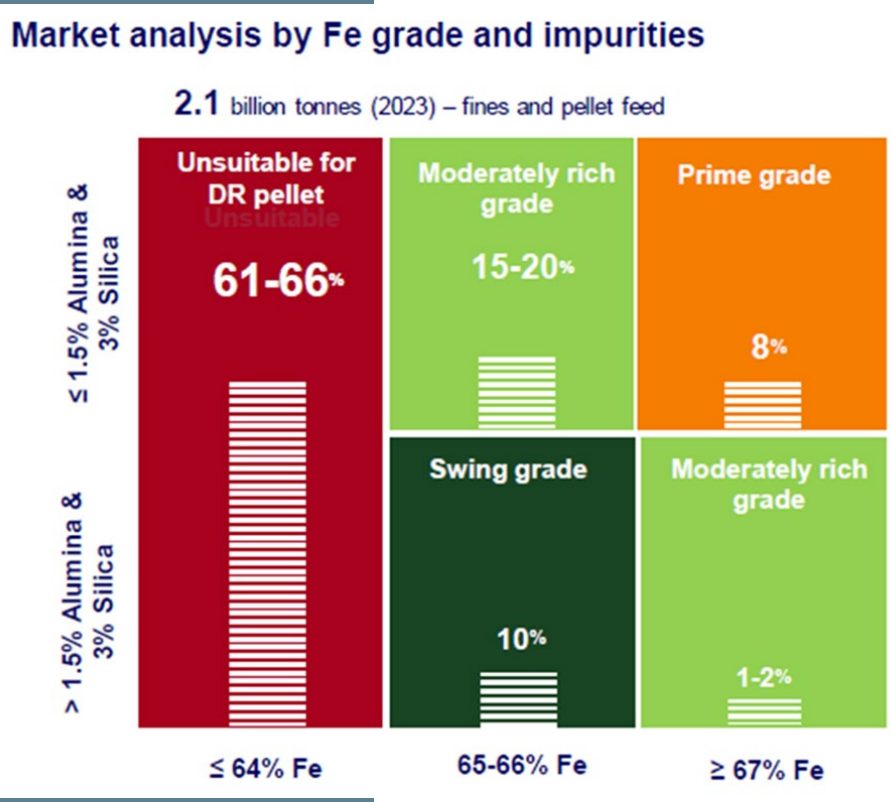
Iron Ore



Source: WoodMackenzie

Supply

1. Short-term oversupply, but emerging long-term quality gap.
2. Structural shortage of DR-grade pellets ahead. Producers with suitable concentrate quality (e.g. Brazil, Sweden) are pivoting portfolios toward DR grades.
3. Not all iron ore deposits are capable of producing high-grade materials. Structural risk of declining average iron content.
4. Complex permitting, more intensive beneficiation requirements, and significantly larger volumes of tailings.
5. Abundance of low-grade iron ore continues to act as a structural anchor for the BF-BOF route and for the development of carbon capture technologies and of alternative steelmaking processes. Currently present low maturity.

Metallurgical Coal and Coke

Investment restriction in carbon intensive assets such as coal mines, coke ovens and blast furnaces:

1. Approximately 70% of global steel production via BF-BOF route.
2. The uncertain pace of transition toward alternative routes >> uncertainty around future coal demand. That coupled to shareholders reluctance to invest in carbon intensive assets is constraining capital allocation to new coal projects to replace depleting mines, increasing the risk of supply tightness and disruptions.
3. Expansion of coke supply (e.g. Indonesia) is enabling partial displacement of coke oven capacity (linked to availability of competitive of natural gas or electricity).
4. Anticipated coke oven capacity displacement by late 2030s may not be fully offset by new supply sources.

Metallurgical Coal and Coke

Concentration of production in fewer producing regions:

1. Metallurgical coal will remain a critical input to the steel industry for decades. Markets are expected to become increasingly volatile.
2. Evolving regional regulatory frameworks, combined with constrained capital allocation and complex permitting processes, are limiting the ability of suppliers to timely respond to new requirements.
3. Coal markets remain highly regionalized. China and Mongolia dominate domestic production (and less prone to abandon the BF-BOF route), while the seaborne market remains primarily supplied by Australia, the United States, Canada, and Russia.
4. Demand growth is increasingly concentrated in India and Southeast Asia.

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Thank you!

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