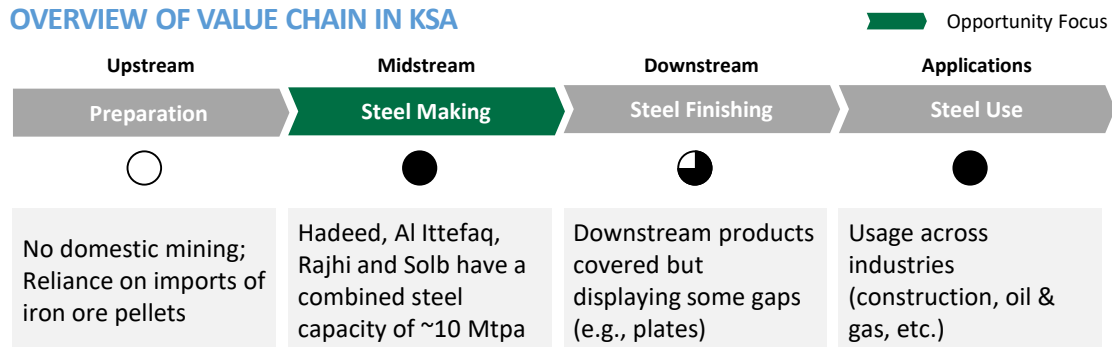


# Green Steel

## OPPORTUNITY DESCRIPTION

Build a world-scale plant of ~4 Mtpa green hydrogen-based steel slabs production. The plant will leverage KSA's low-cost electricity to enable hydrogen-based DRI. The project will commence utilizing 30% green hydrogen for DRI at first, and scale up progressively to use 100% green hydrogen over a period of 5 years

## OVERVIEW OF VALUE CHAIN IN KSA



## MARKET DRIVERS

- + Global green steel supply will reach ~2 Bn tons by 2025 and grow at ~14% CAGR while its trade will reach ~USD 260 Bn by 2025 and grow at ~9% CAGR, till 2050, driven by:
  - **Stricter emissions regulations** and govt. initiatives to decarbonize steel industry
  - **Push from end-use customers** to de-carbonize their supply chain
  - Ambitious **targets of major steel makers** to reduce their carbon intensity
- 100% green hydrogen based DRI-EAF expected to be technologically and commercially ready over the next 5 years, and is being piloted at industrial scale by several majors

## DISRUPTION POTENTIAL

Trade size	● Large global export market of ~USD 260 Bn by 2025, with projected trade growth for green steel of 9% p.a.
Technology Disruption	● Capacity to develop <b>cost-effective</b> renewable energy supply essential to viability of new green-steel technologies (e.g., Hydrogen DRI-EAF)
Sustainability Disruption	● High carbon emission intensity of <b>1.85 tons of CO<sub>2</sub> per ton of traditional steel</b> ; >90% <b>de-carbonization</b> with green hydrogen
Trade Disruption	● <b>High risk countries</b> (e.g., China, Russia, Ukraine) account for >30% of global steel trade, potentially disrupting supply chain

## KSA COMPETITIVENESS

Existing Competency	● <b>Strong manufacturing industrial base</b> , and upcoming new facilities – KSA has ~10 Mtpa of conventional crude steel making capacity
Utilities Requirements	● Electricity is ~40% of total cash costs
Raw Material Availability	● <b>High dependency on raw materials imports</b> , partially compensated by the usage of scrap
Strategic Location	● Strategic location of KSA to supply key regional and European markets; EU imported ~21 Mt of steel products in 2020
Regional Demand	● KSA demand for downstream steel products expected to reach ~16.2 Mt by 2030 (2.2% CAGR), i.e., USD 16 Bn market size

## OPPORTUNITY FINANCIALS

(Preliminary and Indicative)

CapEx (USD Mn)	4,700 - 5,000	IRR (without incentives)	5 - 7 %	Payback Period	16 - 18 years	Workforce	1,800 - 2,000
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