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# Renewables + Electrification

How the Oman–Thailand  
value chain enables lower-  
carbon steel

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Shane Miller, June 2026



**MERANTI™**  
GREEN STEEL

# WHY STEEL IS HARD TO DECARBONIZE

- **CONVENTIONAL ROUTE · BF–BOF**

- **Coal is fuel and chemical input**

- Blast Furnace–Basic Oxygen Furnace (BF–BOF) uses coking coal as both the energy source and the chemical reductant to convert iron ore into iron. Removing coal is not simply a fuel switch – it requires a completely different ironmaking chemistry.

- *Coal is both fuel and chemical input in conventional steelmaking.*

- **LOWER-CARBON ROUTE · DRI + EAF**

- **Two big shifts: cleaner ironmaking + electrification**

- Direct Reduced Iron (DRI) replaces coal-based ironmaking using natural gas or hydrogen as the reductant. Hot Briquetted Iron (HBI) is the stable, transportable form. An Electric Arc Furnace (EAF) then melts HBI with scrap using electricity – not fossil fuel combustion.

# OMAN: CLEANER IRONMAKING

DUQM, OMAN · GREEN HBI

## Oman converts energy into lower-carbon HBI

- **Renewables → green hydrogen pathway**
- **Direct Reduced Iron (DRI) replaces coal-based ironmaking**
- **Hot Briquetted Iron (HBI) is stable and transportable**

Natural gas today, with a clear pathway to green hydrogen as production scales.  
Module 1: 2.5 Mtpa green HBI.



# THAILAND: ELECTRIC STEELMAKING

RAYONG, THAILAND · EAF STEELMAKING

## Thailand turns HBI + scrap into green steel



**Electric Arc Furnace (EAF)**

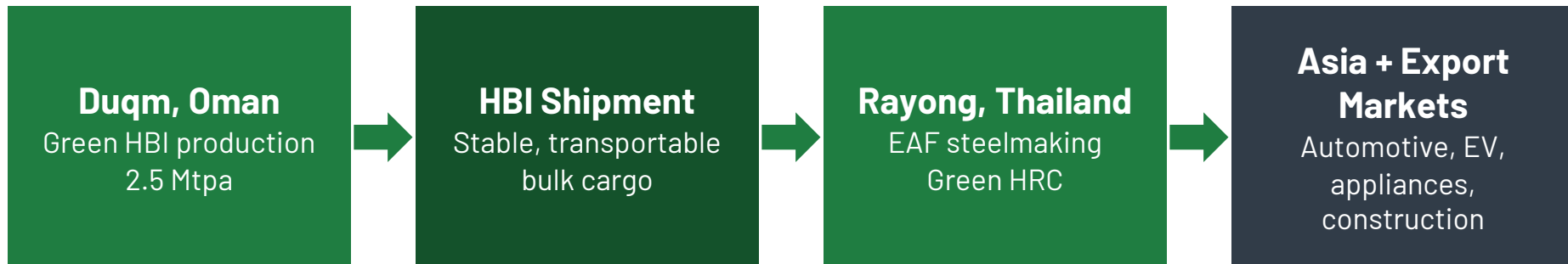
**Renewables via PPAs**

**HBI + scrap feedstock**



DECOUPLED VALUE CHAIN · OMAN → THAILAND

**Make iron where energy is strongest.** Make steel near demand.



*Hydrogen is difficult to ship at scale. The value is carried in HBI instead — stable, dense, and shipment-ready.*

## PROCESS REDESIGN · NOT JUST A FUEL SWITCH

### Not just a fuel switch. A process redesign.

#### CONVENTIONAL ROUTE

- BF–BOF (Blast Furnace – Basic Oxygen Furnace)
- Coal as fuel and reductant
- Single integrated site
- ~2,000 kg CO<sub>2</sub> per tonne of steel



#### MGS ROUTE

- DRI + EAF (Direct Reduced Iron + Electric Arc Furnace)
- Renewables + hydrogen pathway
- Decoupled value chain: Oman + Thailand
- More than 70% CO<sub>2</sub> reduction from day one**

**Renewables power the transition.**  
**Electrification changes the process.**  
**MGS connects both.**

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*Redefine Limits. Enabling Futures.*