

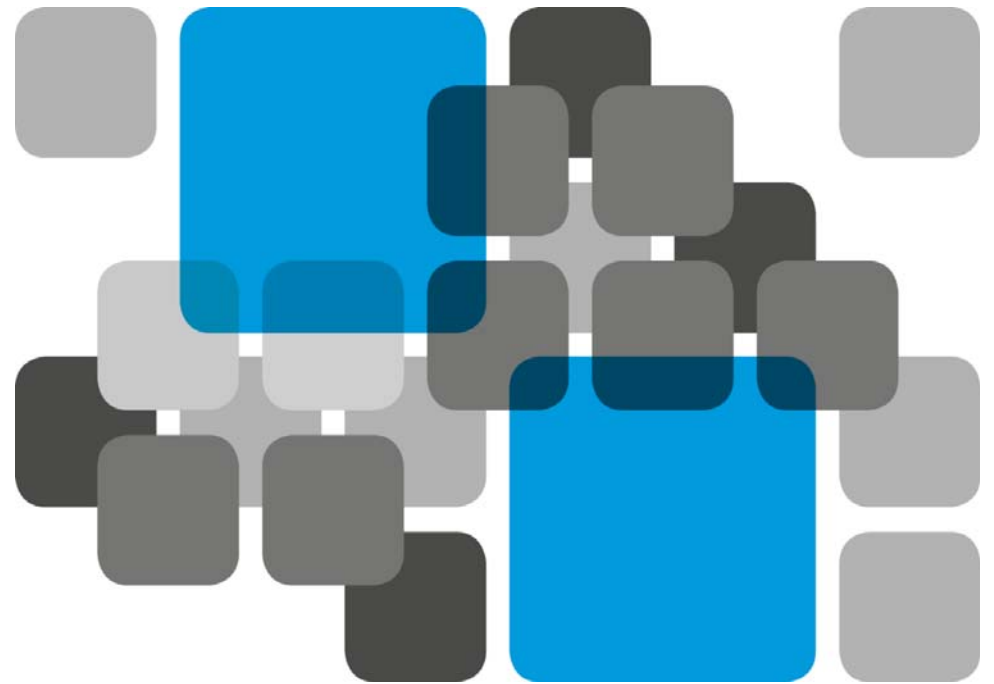


# Prospects for DRI production and demand in the Arab countries in the wake of decarbonisation

- Sunil Seepana, Sr Analyst

Arab Steel Summit 2023

October 2023



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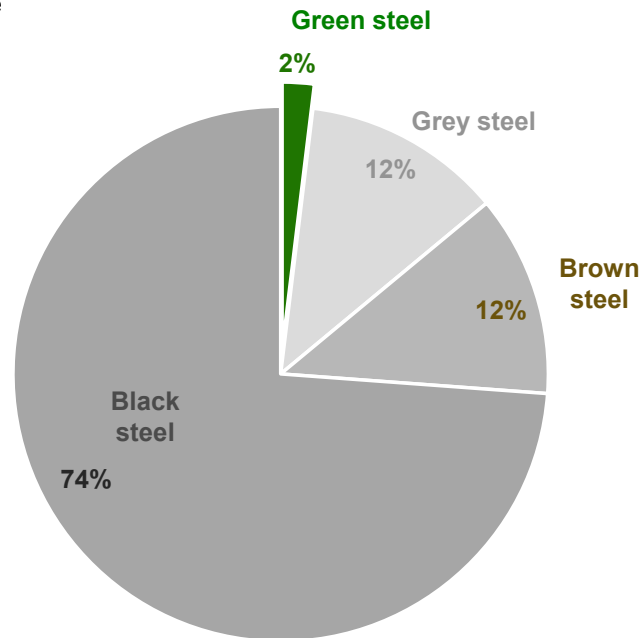
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# Immense efforts will be needed to decarbonise global steel industry

There are four likely steel categories based on Scope 1–3 CO<sub>2</sub> emissions with 2% of production being ‘green’

Market share by category, % total 2023e



Category	Emissions intensity <sup>(1)</sup>
Green steel	<0.4
Grey steel	0.4-0.8
Brown steel	0.8-1.6
Black steel	>1.6

Although there is currently no legally accepted definition of ‘green steel’, low carbon products are likely to be associated with emissions below 0.4t CO<sub>2</sub>e/t of finished steel and thus 98% of global steel production would not be categorised as green steel.

DATA: [CRU Emissions Analysis Tool](#)

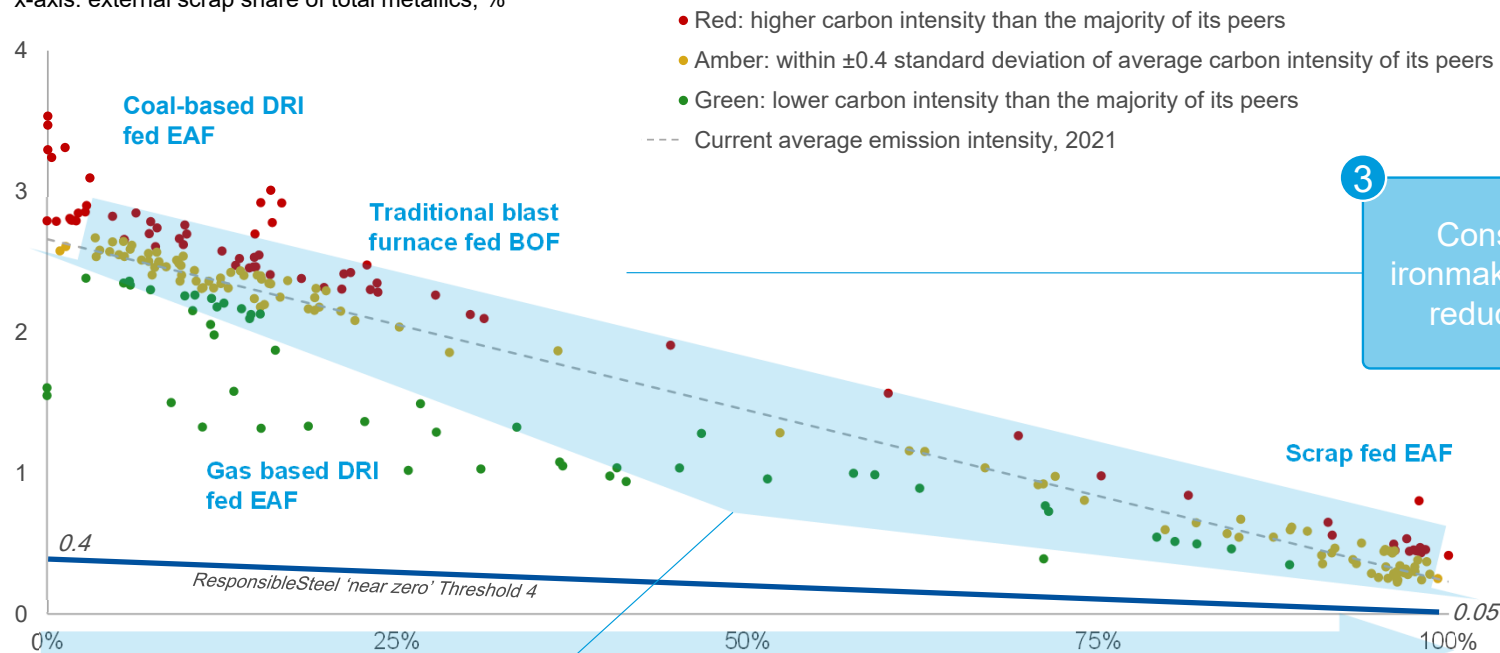
NOTE: (1) Scope 1+2+3 in t CO<sub>2</sub>e/t crude steel

# Initial change will be process optimisations to reduce emissions

PP0



y-axis: CO<sub>2</sub> emissions intensity by mill, Scope 1 + 2 + 3 emissions, tCO<sub>2</sub>/tcs  
 x-axis: external scrap share of total metallics, %



1 Regardless of technology used today, there are optimisations that can be made to further reduce emissions

3 Consequently, lower emission ironmaking technology is required to reduce overall steel emissions.

2 While the lowest emissions option, shifting to wholly scrap-based production is not feasible, now or in the longer-term

DATA: CRU Emission Tool

## Slide 5

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**PP0** We might need to hide at-least the Y-axis on this chart to protect our IP.

Puneet Paliwal; 2023-10-26T05:23:36.207

**SS0 0** Ok.. will do

Sunil Seepana; 2023-10-26T05:42:54.154

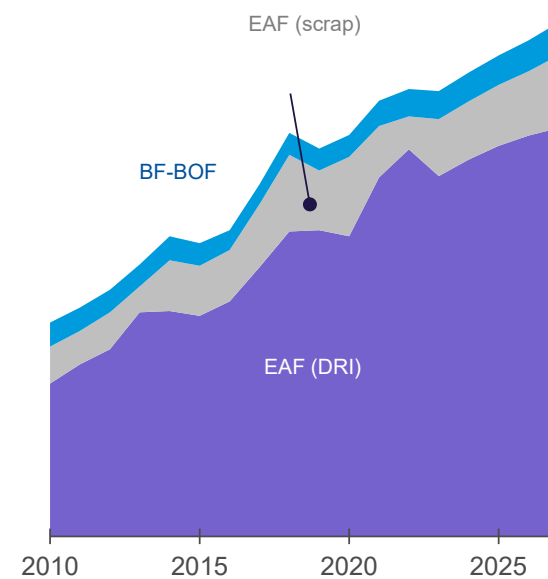
# Middle East well positioned on the steel emission curve

MENA is the largest DRI based steel producing region aided by the availability of natural gas

PP0



MENA crude steel production by process, Mt



DATA: CRU

## Slide 6

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**PP0** DRI producer or DRI based steel producer? They may very well be the largest DRI producer as well, but charts in the slide talk about steel, not DRI specifically.

Puneet Paliwal; 2023-10-26T05:12:22.171

**SS0 0** Yeah,, they both are the same but I will change it to DRI based steel producer..

Sunil Seepana; 2023-10-26T05:17:02.603

**PP0 1** I changed it to DRI based steel producing region. Hope that's fine.

Puneet Paliwal; 2023-10-26T05:22:09.006

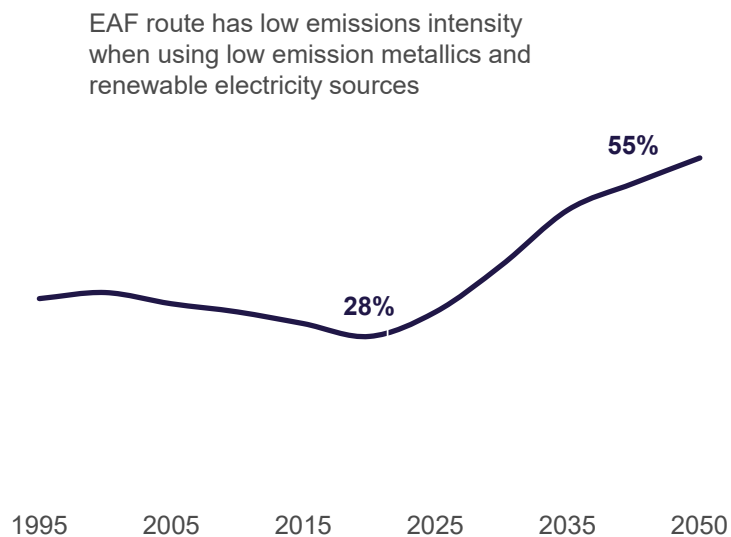


# Globally EAF share will increase as push for decarbonisation intensifies

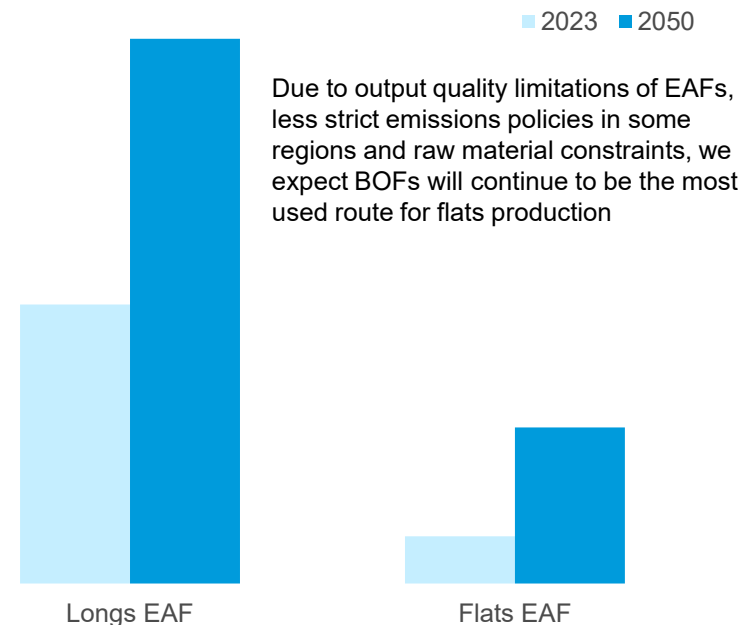
EAF share will reach 55% by 2050 but BF-BOF will be the preferred route for flats production

PPO

EAF share in crude steel production, %



EAF share in longs and flat products production, %



DATA: CRU Long term market outlook, World Steel Association

## Slide 7

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**PP0** Do we know how much will be the share of MENA region in flats EAF growth here?

I ask because you had a slide in the SSMO which talked of several steel plants being commissioned in the region with flat steel production through the EAF route.

If MENA has a substantial share in Flats EAF growth, they may be able to position themselves as a preferred low emissions HRC/HRP suppliers to the global manufacturing industry, atleast until early 2030s.

This may be a key message to pass on to the audience.

Puneet Paliwal; 2023-10-26T05:19:28

**SS0 0** Not sure of the number.. but there's at least 4 investments that already being planned in MENA.. So I presume it'd be more than the global average..

Sunil Seepana; 2023-10-26T05:42:05.650

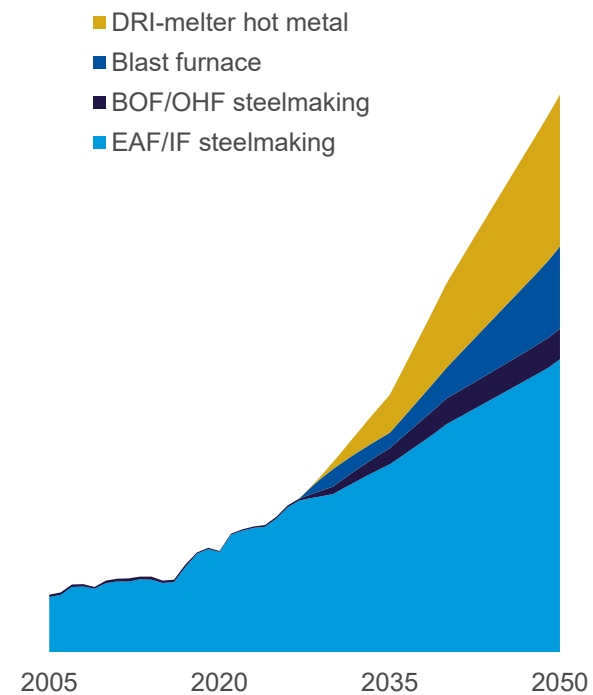
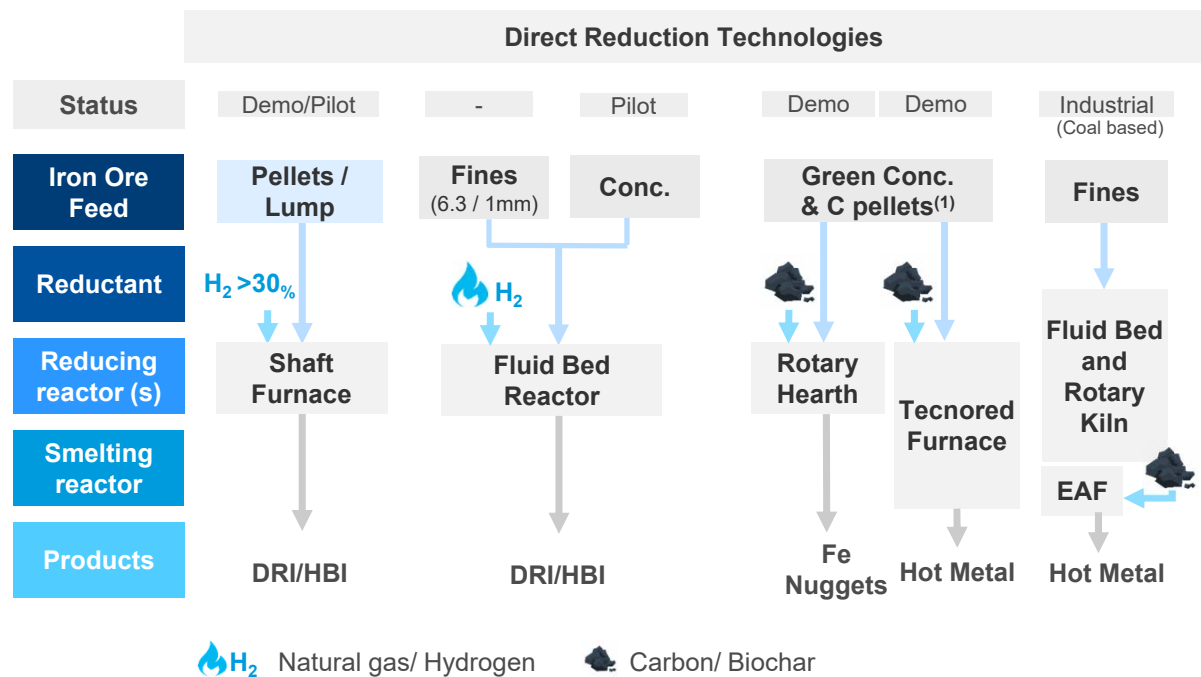
# Alternative ‘Direct Reduction’ technologies are being explored

PP0

Globally, EAF will dominate DRI demand, but melters will gain momentum by 2040

PP1

World DRI/HBI consumption by process, bn t



DATA: CRU Long term market outlook, World Steel Association

## Slide 8

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**PP0** Given the technical expertise of your co-panelists, this slide may generate some tricky queries. Be prepared!

Puneet Paliwal; 2023-10-26T05:26:22.984

**SS0 0** yeah,, I thought so too..

Sunil Seepana; 2023-10-26T05:48:13.442

**PP1** Just out of curiosity, why would DRI/HBI be fed into a blast furnace?

Puneet Paliwal; 2023-10-26T05:27:31.848

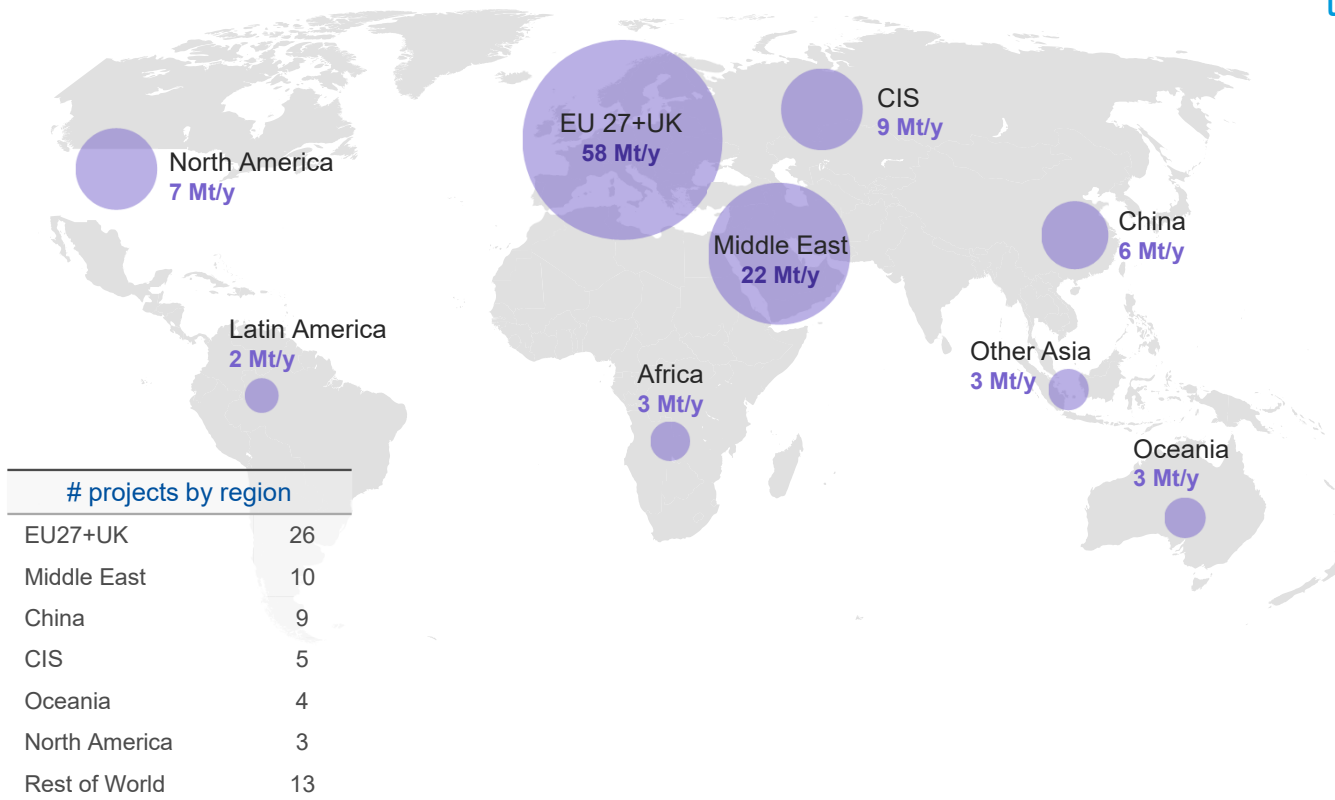
**SS1 0** So based on my discussion with Thais, there's a considerable tightness in the DR grade pellet market.. and so new technologies are being explored to use low grade ore into BF by using alternate direct reduction technologies.. one of which is electric smelting.. this DRI EM BOF also deals with slag generation/disposal issues related to the use of low-grade materials in the EAFs is what I gathered from our LTMO..

Sunil Seepana; 2023-10-26T05:48:02.644

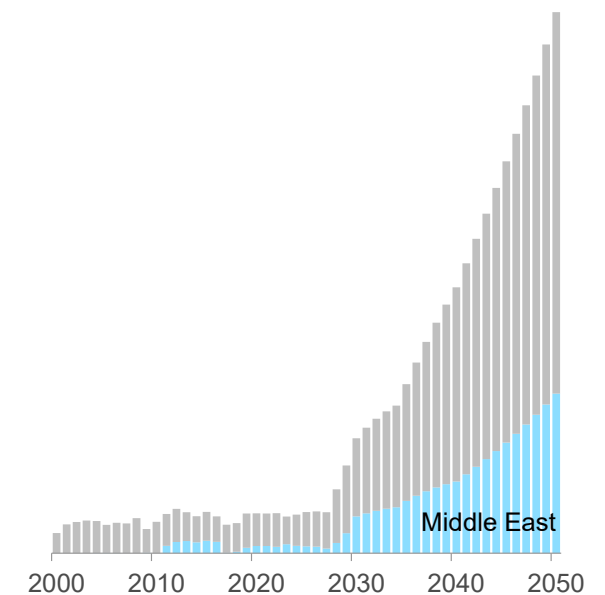
# New DRI/HBI capacity planned to support the increase in demand

DRI/HBI capacity announced, Mt/y

Rise in HBI trade a new challenge for the shipping industry



DRI/HBI exporters, Mt



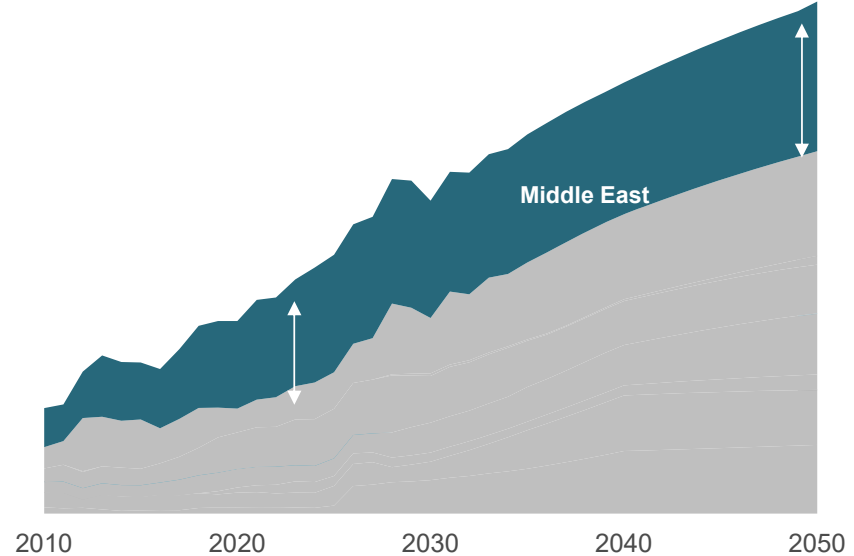
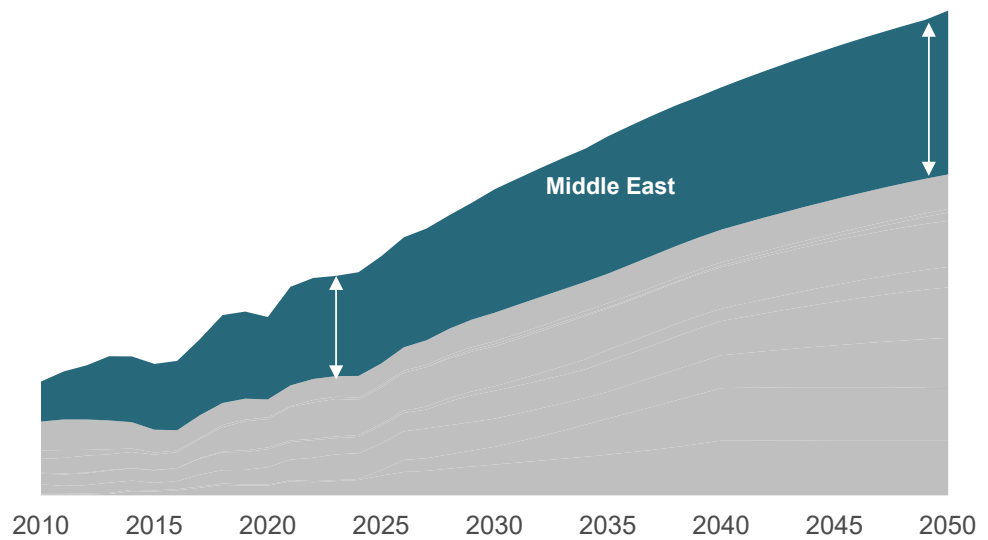
DATA: CRU Long term market outlook, Company reports

# DR Pellet – Decarbonisation efforts drive strong market growth

Middle East will remain the primary demand centre and, despite increasing production, imports to persist

DR pellet demand Mt (wet, 65% Fe basis)

DR pellet production Mt (wet, 65% Fe basis)



DATA: CRU Long term market outlook

## Slide 10

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**PP0** Do both these charts have the same scale?

Puneet Paliwal; 2023-10-26T05:29:51.373

**SS0 0** yes.

Sunil Seepana; 2023-10-26T05:48:45.225

**PP0 1** Could we have 5 year gaps in the RHS chart, same as the LHS chart, so that both charts look similar?

Puneet Paliwal; 2023-10-26T06:00:17.759

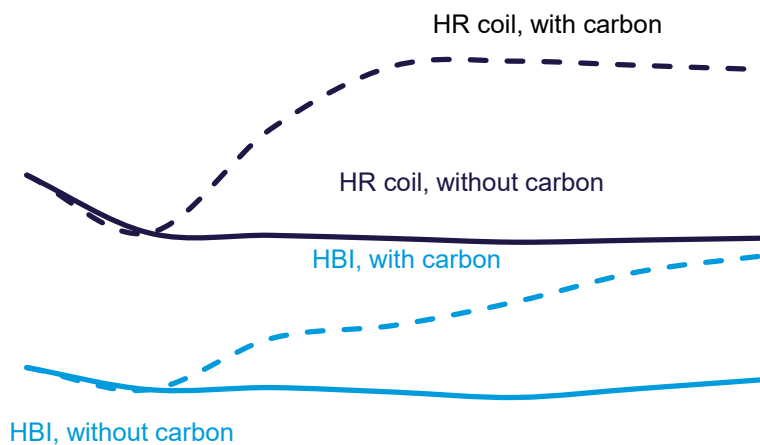
**SS0 2** Done.

Sunil Seepana; 2023-10-26T07:42:21.141

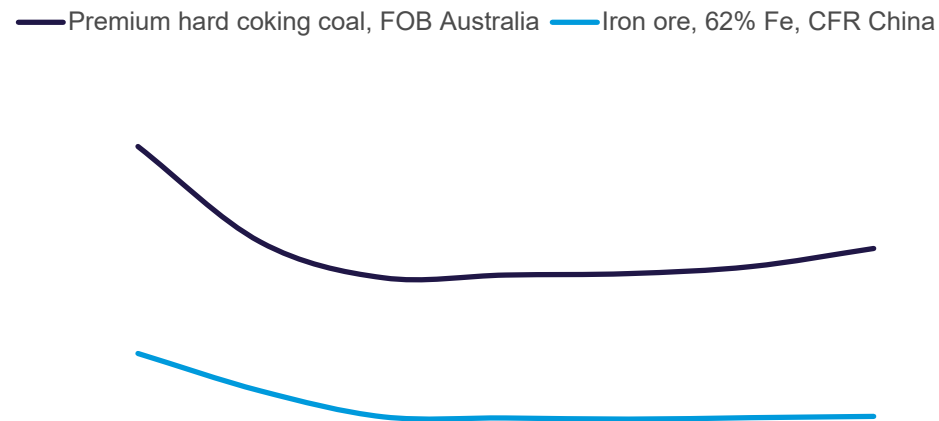
# Decarbonisation will push steel and HBI prices up

## But bulk raw materials prices will fall

HR coil, Germany and HBI price scenarios, \$/t, Real 2023



Iron ore and met. coal prices, \$/t, Real 2023



DATA: CRU Long term market outlook

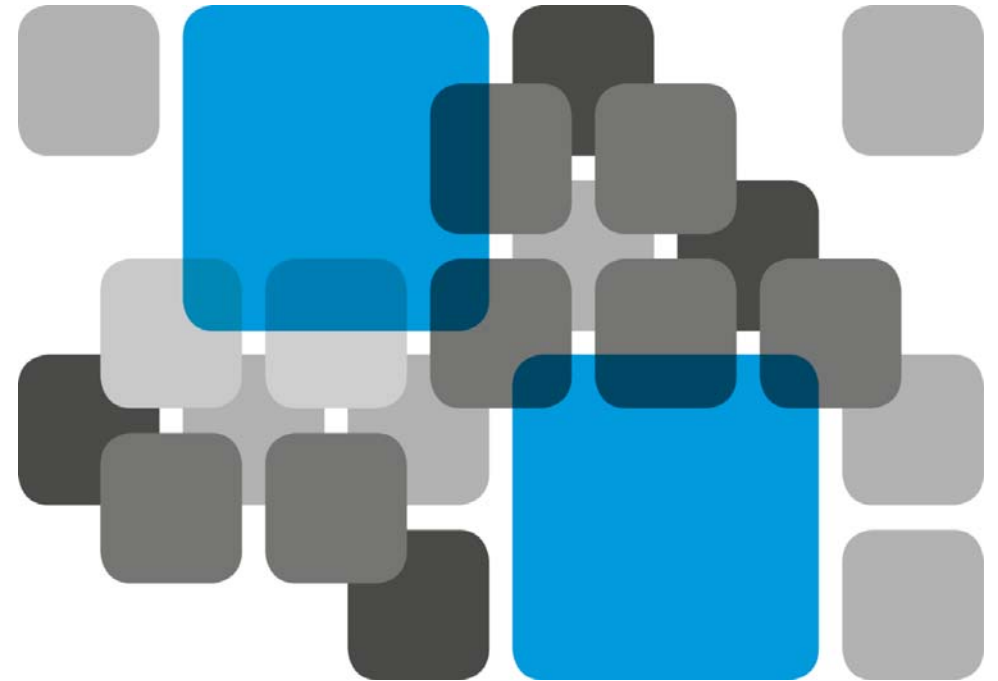




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