

The path towards steel decarbonisation



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Severstal is the most efficient steel company in the world

Vertical integration is the foundation of our efficiency



35,3%

The highest EBITDA margin in the world in Steel Industry



FINANCIAL
2020FY

\$6,870mln
REVENUE

\$2,422 mln
EBITDA



50000
employees



19000
products



6000
clients



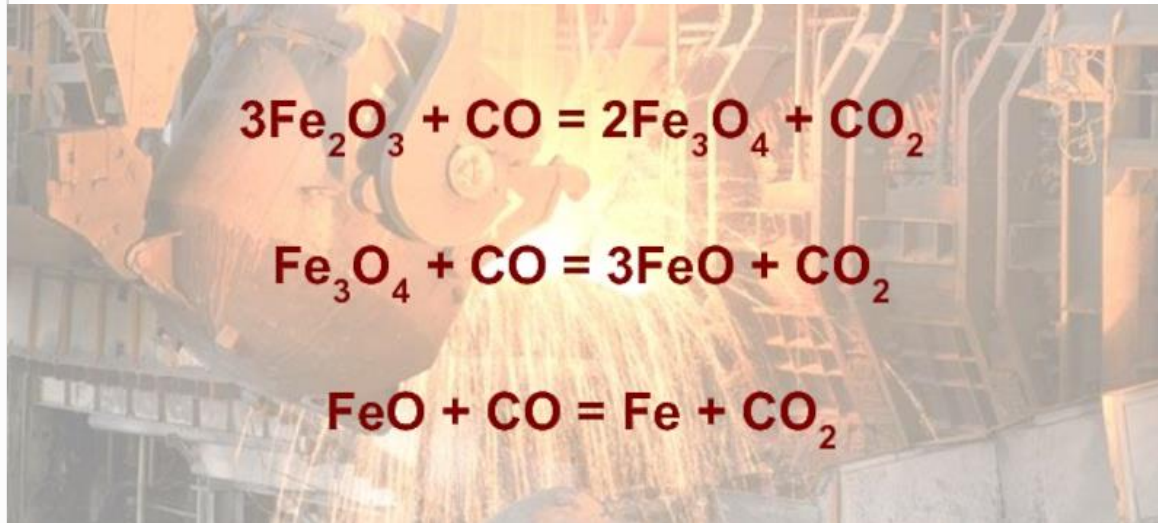
77
countries

Carbon and hydrogen as a reducing agent: new technological platform of metallurgy



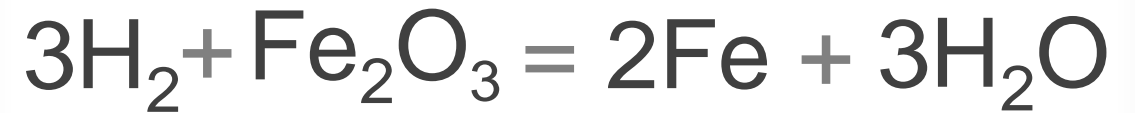
DO...

Blast furnace chemistry

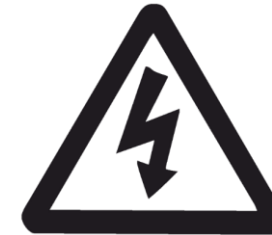


...CAN DO

Hydrogen metallurgy



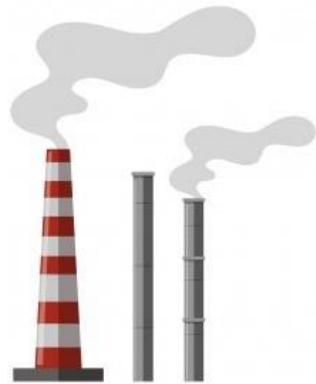
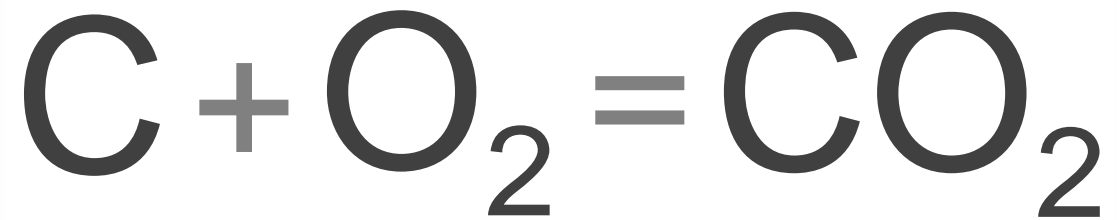
Ore electrolysis



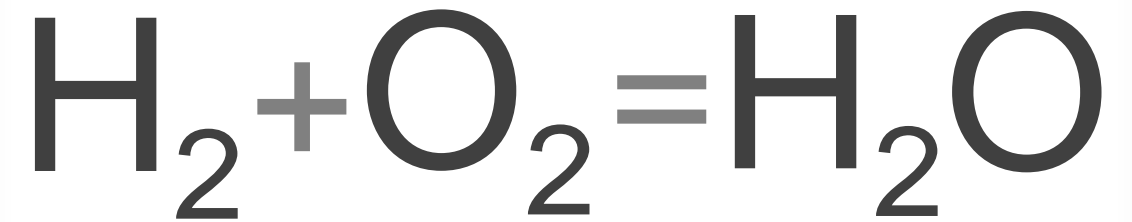
Carbon and hydrogen as a heat source



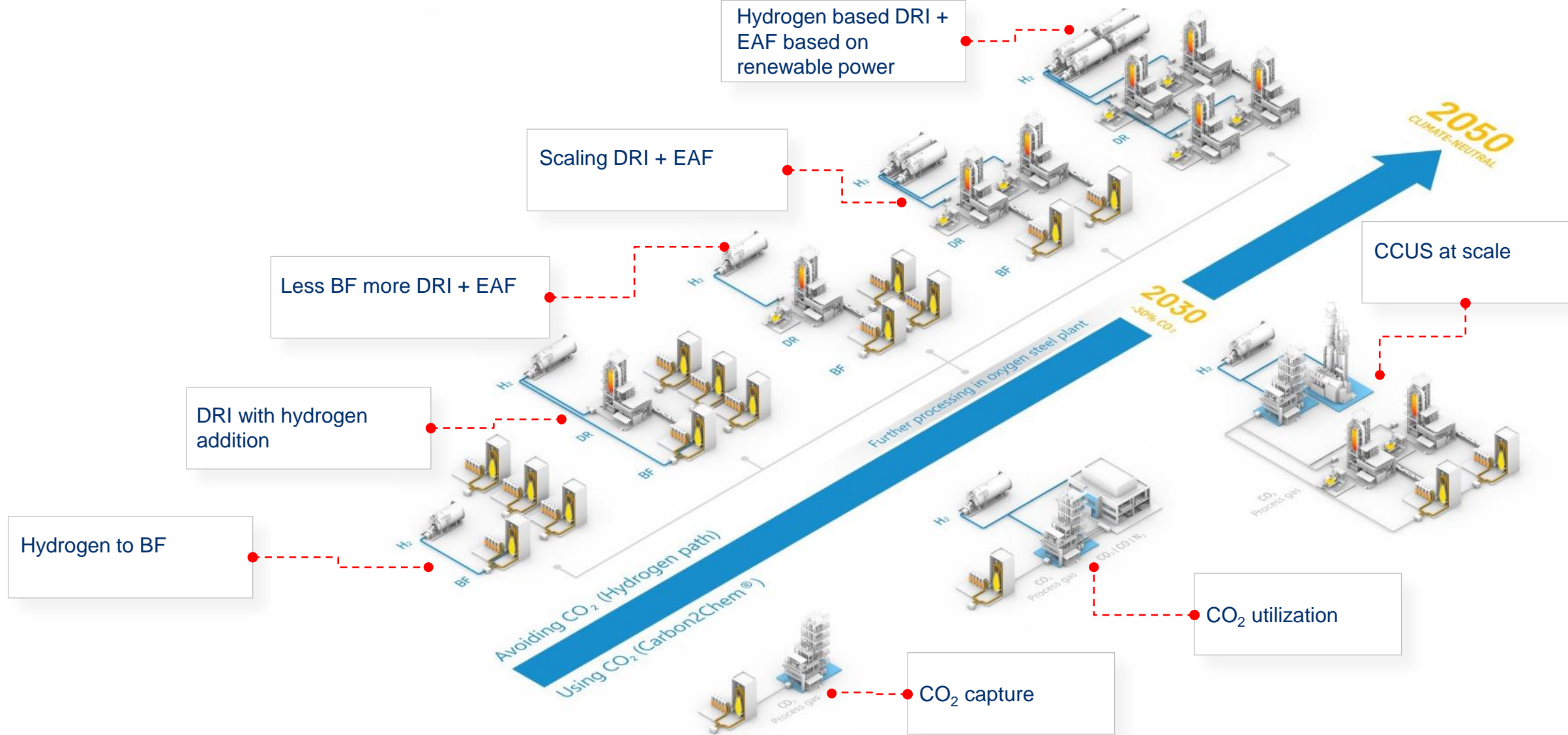
DO...



...CAN DO

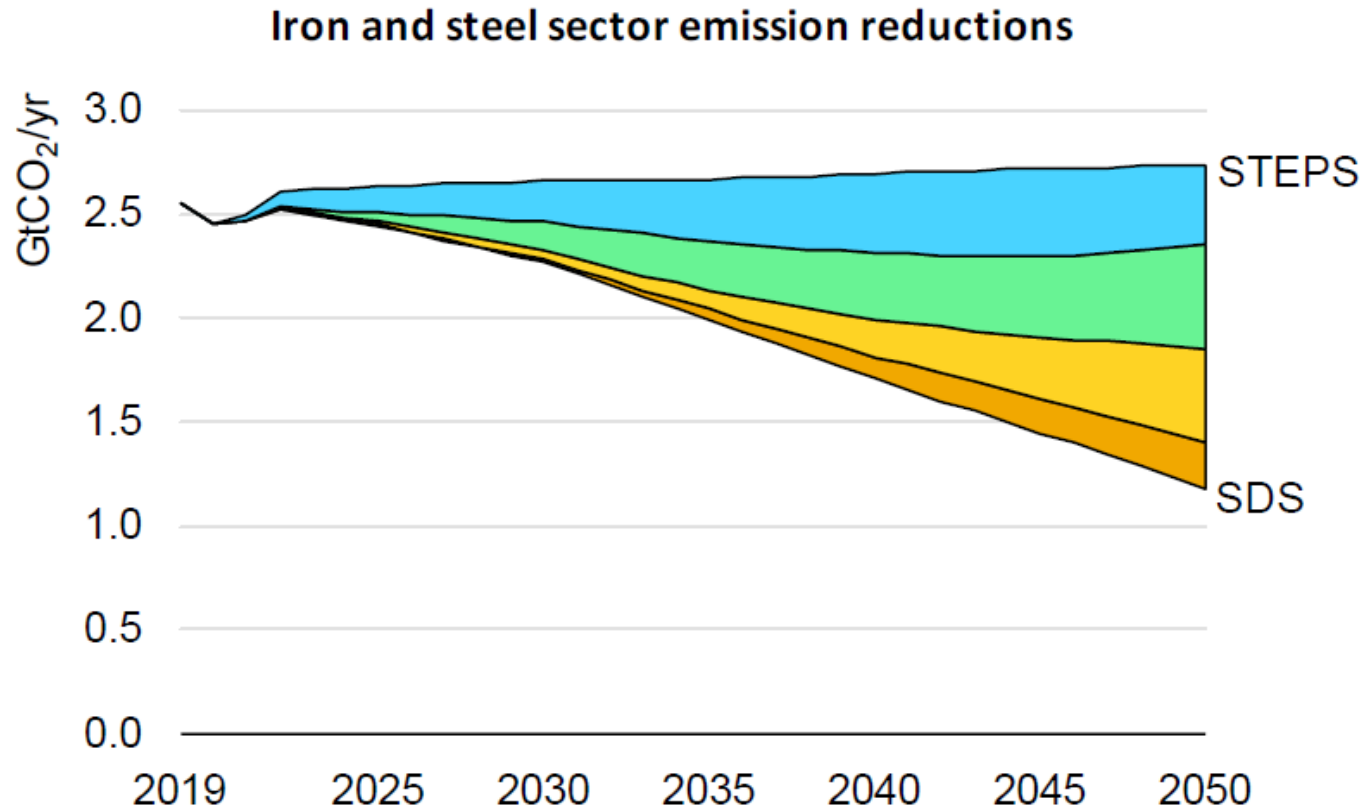


Basics of Net Zero Steel scenario

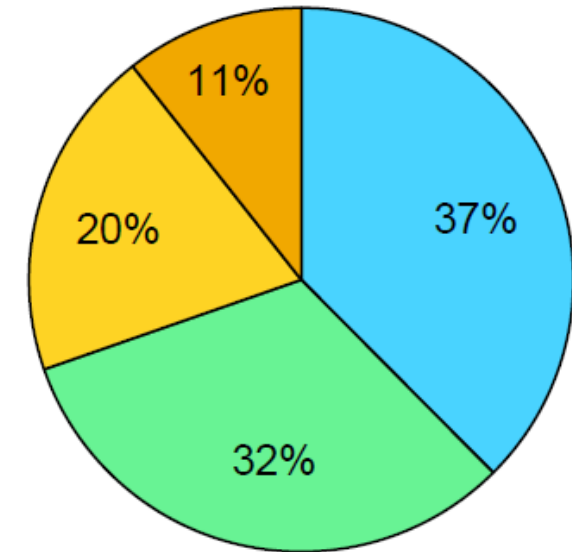




The future of green steel depends on new technologies and the CAPEX cycle



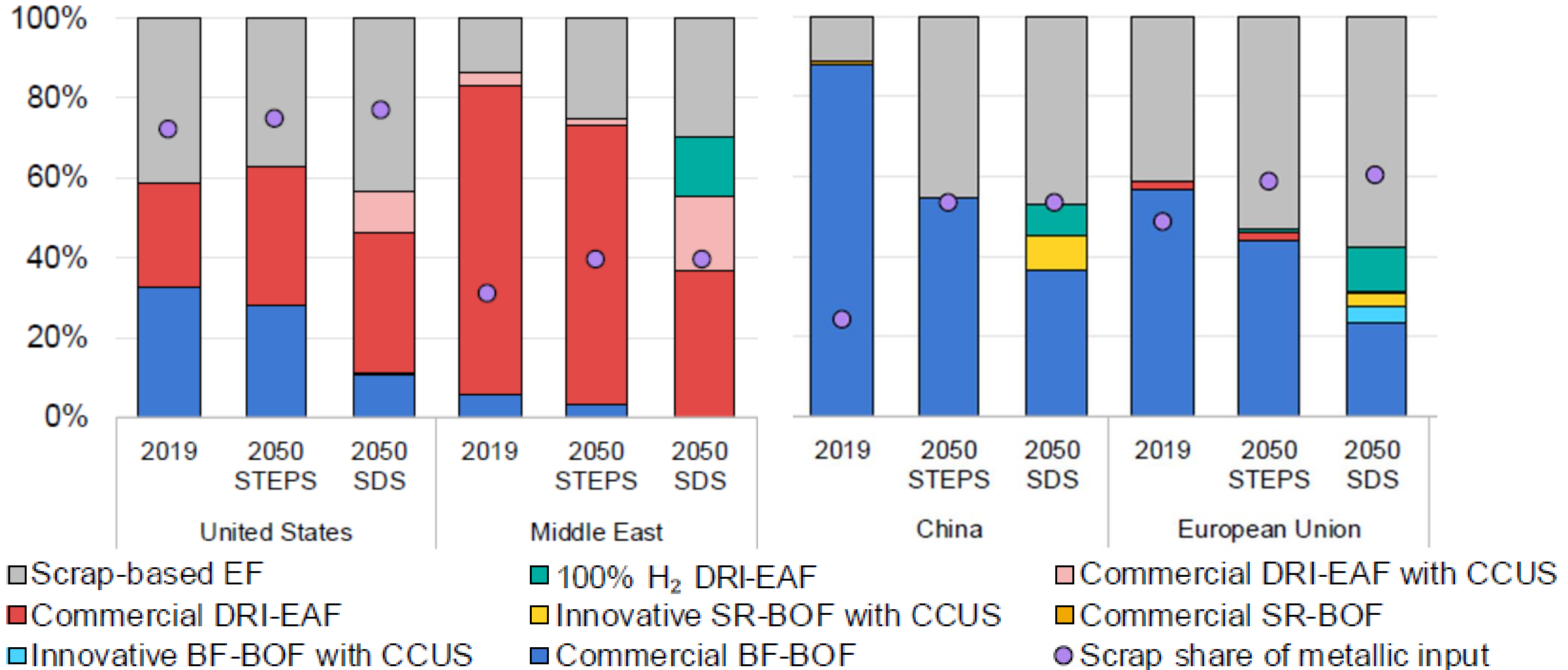
Cumulative emission reductions between 2020 and 2050



■ Mature ■ Early adoption ■ Demonstration ■ Prototype



Not all steel will be green. There will be many approaches implemented.



We need hydrogen no matter whether we choose to decarbonize steelmaking processes, power generation or to utilize CO₂



01



Blast furnace and other steelmaking processes

- Adding hydrogen into BF to reduce emissions
- Switching to hydrogen-rich DRI
- Steel annealing in a hydrogen atmosphere
- Hydrogen from BF and coke oven gas

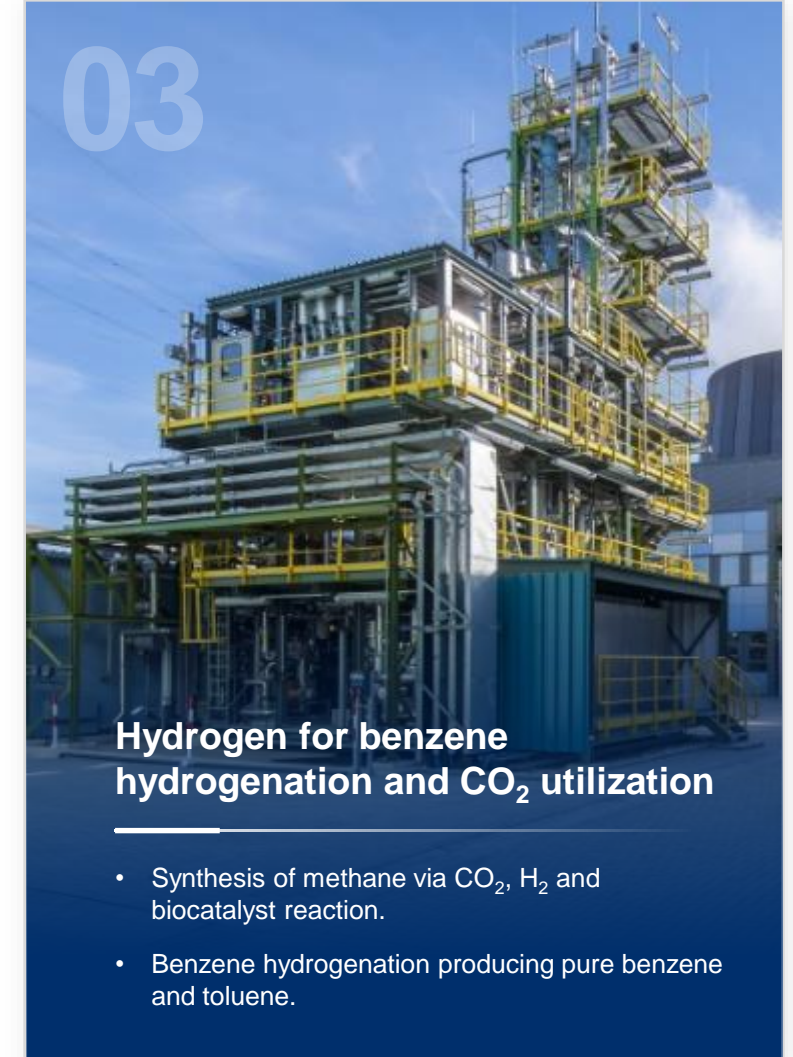
02



Electricity generation and related processes

- Switching to hydrogen-based power (mixing hydrogen and natural gas)
- Electrolysis based hydrogen

03



Hydrogen for benzene hydrogenation and CO₂ utilization

- Synthesis of methane via CO₂, H₂ and biocatalyst reaction.
- Benzene hydrogenation producing pure benzene and toluene.



Thank you!

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