Steelmaking Coal Resilience

May 9, 2022

Teck

Caution Regarding Forward-Looking Statements

Both these slides and the accompanying oral presentation contain certain forward-looking information and forward-looking statements as defined in applicable securities laws (collectively referred to as forward-looking statements). These statements relate to future events or our future performance. All statements other than statements of historical fact are forward-looking statements. The use of any of the words “anticipate”, “plan”, “continue”, “estimate”, “expect”, “may”, “will”, “project”, “predict”, “potential”, “should”, “believe” and similar expressions is intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause actual results or events to differ materially from those anticipated in such forward-looking statements. These statements speak only as of the date of this presentation.

These forward-looking statements include, but are not limited to, statements concerning: steel demand projections, steelmaking coal demand and supply projections, the expectation that long-term demand for seaborne hard coking coal will remain robust; steel decarbonization expectations; the statement that Teck’s hard coking coal is optimally positioned for a decarbonization future; expectations regarding decarbonizing technology; expectations regarding CCUS technology, including efficacy and adoption expectations; expectations regarding the Teck Trail Smelter CCUS Pilot, including timing and contribution to emissions reduction targets; expectations regarding hydrogen steelmaking; Teck’s carbon neutrality targets and other statements relating to steelmaking coal resilience.

Actual results and developments are likely to differ, and may differ materially, from those expressed or implied by the forward-looking statements contained in this presentation. Such statements are based on a number of assumptions and expectations that may prove to be incorrect, including, but not limited to: general business and economic conditions; the supply and demand for, deliveries of, and the level and volatility of prices of steelmaking coal; our production and productivity levels, as well as those of our competitors; the impacts of the COVID-19 pandemic on our operations and projects and on global markets; development and performance of technologies in accordance with expectations, including but not limited to CCUS technologies; and continued use of steelmaking coal in accordance with expectations. . Our sustainability goals are based on a number of additional assumptions, including those regarding the development, availability, performance and effectiveness of technologies needed to achieve our sustainability goals and priorities; the availability of clean energy sources and zero-emissions alternatives for transportation on reasonable terms; our ability to implement new source control or mine design strategies on commercially reasonable terms without impacting production objectives; our ability to successfully implement our technology and innovation strategy; and the performance of new technologies in accordance with our expectations.

Inherent in forward-looking statements are risks and uncertainties beyond our ability to predict or control. The foregoing list of risks, important factors and assumptions is not exhaustive. Other events or circumstances could cause our actual results to differ materially from those estimated or projected and expressed in, or implied by, our forward-looking statements. Factors that may cause actual results to vary materially include, but are not limited to: government action relating to carbon-related industries; current and new technologies relating to steelmaking coal resilience and our sustainability goals and targets may not be available on reasonable terms or perform as anticipated; and alternative technologies may develop more quickly than anticipated and reduce the demand for steelmaking coal.

Except as required by law, we undertake no obligation to update publicly or otherwise revise any forward-looking statements or the foregoing list of factors, whether as a result of new information or future events or otherwise. Further information concerning risks and uncertainties associated with these forward-looking statements and our business can be found in our Annual Information Form, including under the section titled “Risk Factors”, and in subsequent filings, including, but not limited to our quarterly reports, all of which can be found under our profile on SEDAR (www.sedar.com) and on EDGAR (www.sec.gov).

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Executive Summary

Steel demand is forecast to remain strong through to 2050

- Steel is not substitutable for most applications
- Steel is required for infrastructure development, including that required to support electrification and decarbonization

Demand for high-quality seaborne hard coking coal used in blast furnace steelmaking is forecast to remain strong

- Forecast long-term demand for steel is strong in high growth importing regions such as India and South-East Asia where blast furnace steelmaking will dominate
- Teck's high-quality seaborne steelmaking coal will continue to be a key resource for the low-carbon transition

Global steel industry emits 7-10% of total GHG emissions

- Meeting the objective of the Paris Accord will rely on a range of steelmaking abatement technologies
- Together they can reduce steelmaking emissions by more than 80% by 2050

Blast furnace CCUS is the only technology capable of decarbonizing steelmaking at the rate and scale required by 2050

- >70% of the world's steelmaking uses blast furnaces
- Leverages sunk cost of more than US$1 trillion of young blast furnaces, which will last well into the second half of this century
- Blast furnace CCUS is the only technology commercially ready for near-term adoption

Long-Term Steelmaking Coal Demand

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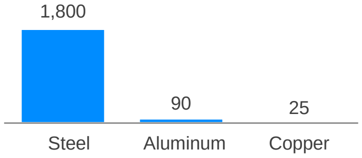
Steel is Essential for Economic Growth In a Low-Carbon World

World's largest metal market today

Steel is **widely used** and **hard to substitute**

Growth continues to be driven by **decarbonization** and ongoing economic development

Global Production in 2019 (Mt)



Enables low-carbon energy system

Fundamental to **renewable energy transition** and **1.5° C target** of Paris Accord

Steelmaking coal required while **alternatives evolve** and **carbon abatement policy advances**

~25% Lower

CO_2 footprint in steel relative to cement

Suited for a circular economy

Easily recyclable (e.g., without alloy issue of aluminum)

80%+ recycle rate of steel scrap in developed economies[1]

>90% Lower

CO_2 footprint of recycled steel compared to new steel

Essential to lifting global living standards

Middle class expected to grow by **2-3 billion people** by 2050, **mostly in India and South-East Asia (SEA)**

Rural communities are **moving to cities**, driving infrastructure build

~165% Increase

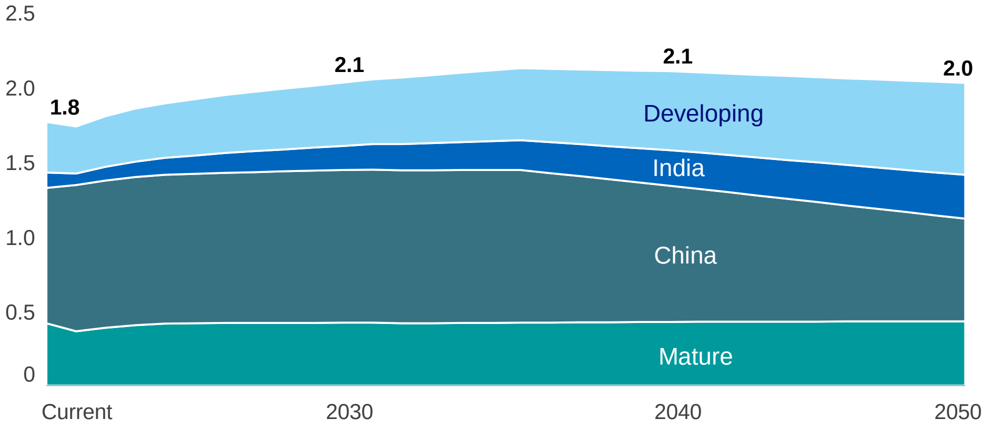
in combined annual demand growth for India and SEA[2] between 2019 and 2050

Steel Demand Is Robust Through 2050 In all IEA Scenarios

Finished steel demand, billion tonnes

Standard Growth scenario – IEA SDS[1]

- Industrialized growth in India and South East Asia
- China plateaus until 2030 before converging to Japan/Germany levels
- Growth in North America from green infrastructure development



Robust Growth Scenario – IEA STEPS[2] China grows for several more years and then joins developed Asian rate	**2.1**	**2.3**	**2.4**
Muted Growth Scenario China decline to Western European levels by 2050	**1.8**	**1.9**	**1.8**

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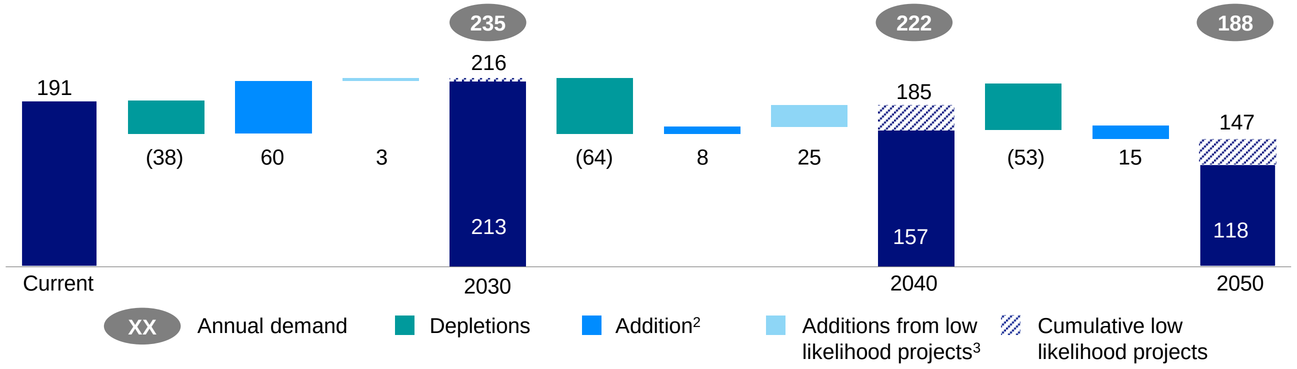
High-Quality Steelmaking Coal is Required For the Low-Carbon Transition

Seaborne Steelmaking Coal Supply Changes With All Projects Through 2050[1] (Mt)



Seaborne Steelmaking Coal Supply/Demand Gap (Mt)

(Mt)	**Net Capacity 2030**	**Net Capacity 2040**	**Net Capacity 2050**
Gap with high likelihood projects	-22	-65	-70
Gap with high and low likelihood projects	-19	-37	-41

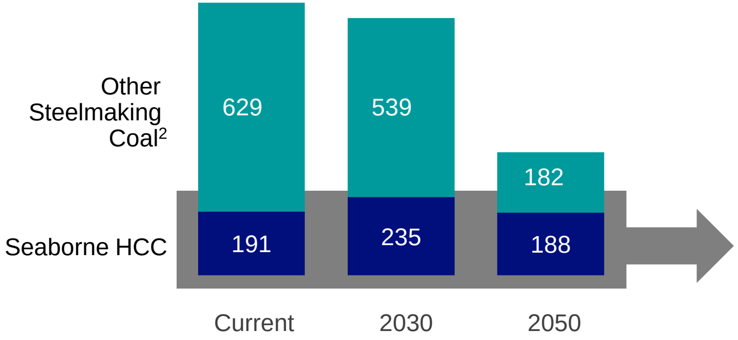
Long-term demand for seaborne steelmaking coal will remain robust

At the same time, supply growth is constrained

Without the addition of confirmed and unconfirmed greenfield and brownfield projects, there will be a significant gap to steelmaking coal demand between 2025 and 2030

Despite Robust Steel Demand, Long-Term Demand for Steelmaking Coal Is Expected to Decline…

Steelmaking Coal Demand[1] (Mtpa)



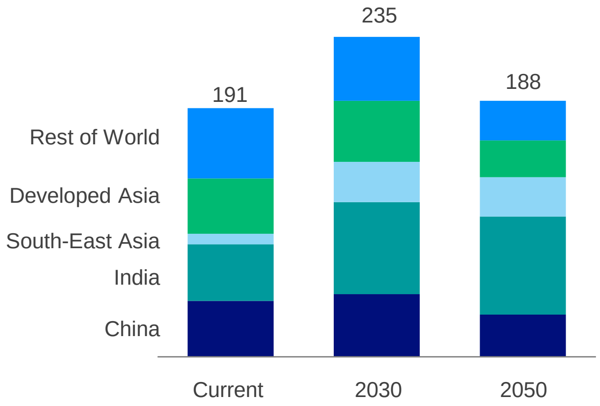
Global demand for <u>non-seaborne hard coking coal</u> is expected to decline by 2050 due to 3 factors:

1. **Increased steel scrap availability and recycling** in mature regions
2. **Declining coke rates** due to blast furnace efficiency gains, expected to erode some coking coal demand
3. **Ramp up of direct reduced iron (DRI) steelmaking using natural gas and hydrogen,** expected to displace some coking coal demand mainly after 2040

The magnitude of steelmaking coal demand will ultimately be driven by the pace of decarbonization

…But Long-Term Demand for Seaborne Hard Coking Coal Will Remain Robust

Seaborne Steelmaking Coal Demand[1] (Mtpa)



- **Seaborne HCC demand is** expected to remain resilient due to steel demand growth in regions that rely on lower-cost seaborne hard coking coal (HCC) imports (e.g., India and South-East Asia) for blast furnace steelmaking
- **Premium hard coking coal such as Teck's product** is expected to be favored as it improves blast furnace efficiency and lowers emissions

Seaborne hard coking coal demand will benefit from strong growth in major importing regions where blast furnace steelmaking will dominate

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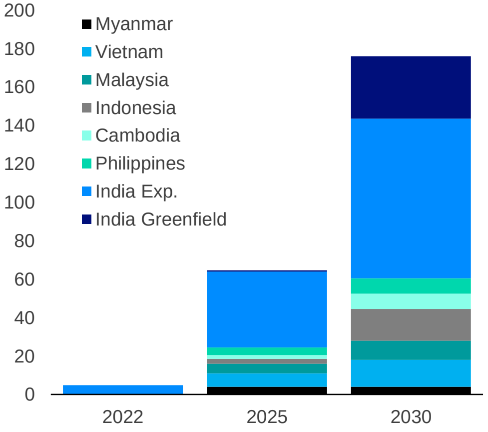
Planned Blast Furnace Capacity Development Is Well Underway in India and South-East Asia

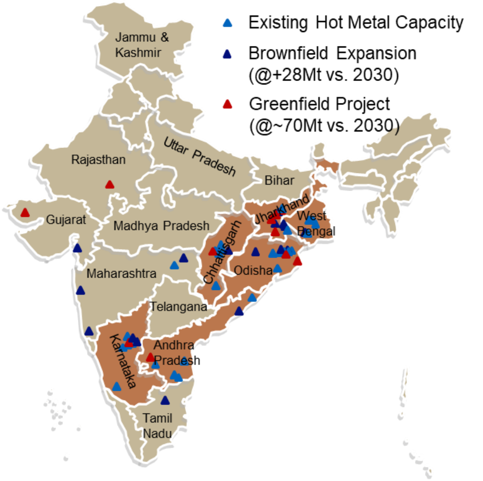
- Asia committing to 20+ years of traditional steelmaking
- European steel mills seek alternatives to coal feed
- Hydrogen pilot plants only, commercial technology still decades away and currently prohibitively expensive
- Seek alternative carbon abatement in CCUS

Blast Furnace Capacity[2] (Mt)

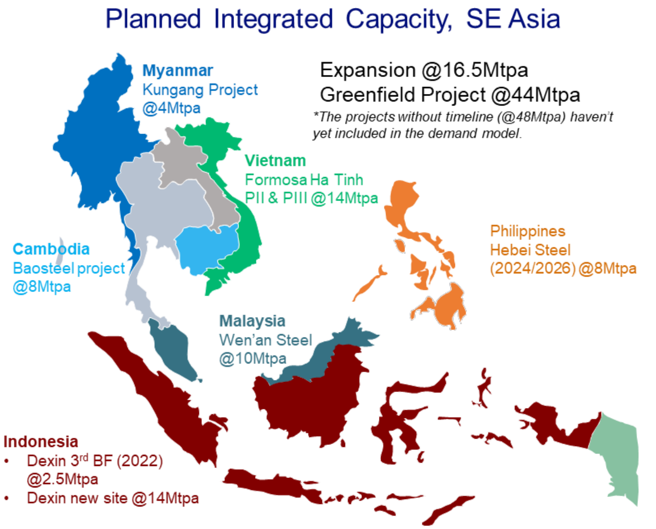


Financial commitments being made for multi-decade traditional steel making

India[1]



South-East Asia[1]



Steel Decarbonization

The Steel Industry Has a Major Role in Decarbonization

Achieving 1.5ºC Will Require Rapid Steel Decarbonization Technology Adoption

- Steel emissions abatement will require **deploying a range of steelmaking decarbonization technologies** regionally beneficia and as they become commercially viable
- Within this range **Blast Furnace (BF) + Carbon Capture, Utilization and Storage (CCUS) will be the most advanced** to deploy on a large scale due to its low cost and technological advantage
- CCUS is the **only technology that can be adopted fast enough to effectively meet China's carbon neutrality goals**, with China accounting for >60% of global steelmaking CO_2 emissions
- **High-quality hard coking coal will also be prioritized** due to its ability to lower CO_2 per tonne of steel produced

With a 7-9% share of global GHG emissions, the success of the steel industry to decarbonize will play a crucial role in the challenge to stabilize the climate in accordance with the 1.5ºC target in the Paris Accord

Steelmaking Decarbonization Technologies Are Driven By Regional Factors…

Blast Furnace + CCUS

Proven technology with favorable economics, and the best combination of speed and scale for decarbonization

Scrap

Currently accounts for ~30% of global crude steel production, and while expected to grow, availability will be limited in new growth regions

H_2-Direct Reduced Iron (H_2-DRI) via EAF

Expected to increase with technology development, and in regions with steady scrap supply, access to abundant cheap renewable power, and near end-of-life blast furnaces (e.g., Europe)

Natural Gas Direct Reduced Iron (DRI) + CCUS via Electric Arc Furnace (EAF)

Effective where there is low-cost & abundant natural gas (Americas, MENA[1] and parts of Asia)

…Characterized by Different Levels of Carbon Abatement and Maturity

● Proven
○ Unproven

	Blast Furnace	Blast Furnace + CCUS	NG-DRI+EAF	NG-DRI+EAF+CCUS	H_2-DRI+EAF	Scrap - EAF
Key reductants	Coke	Coke	Natural gas		Hydrogen	Electricity
CO_2 t CO_2/thm	1.4-1.7[1]	0.3	0.6	0.1	0.1	0.1-0.5
Current maturity	●	◐ **Proven in hard-to-abate sectors**	●	◔ **One steel plant in Middle East**	○ **Demo plants underway**	●

Up to 80% reduction

Hard Coking Coal Yields the Highest Decarbonization Efficiency

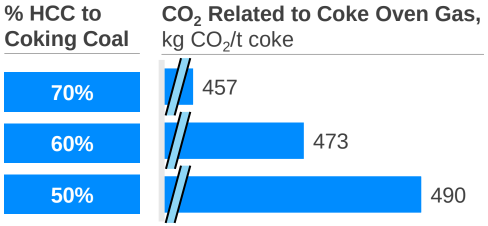
HCC has higher quality parameters that enhance steel production

Steel players are incentivized to maximize HCC due to:

- **Lower volatile matter and higher coke strength**
- **Lower concentration of phosphorous and sulphur,** reducing the cost of impurities removal in coke
- Higher strength coke allows for **higher levels of H_2 injections** which reduces CO_2 emissions

The higher the percentage of HCC to coking coal, the lower the CO_2 emissions

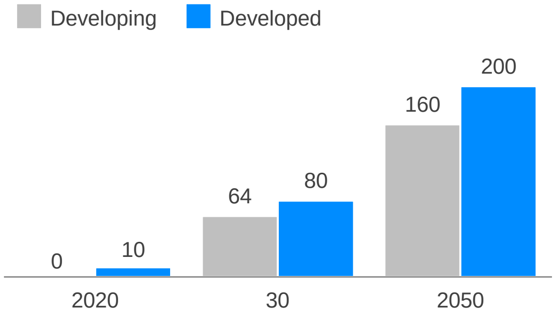
HCC to Coking Coal and CO_2 emissions
%



- HCC allows blast furnaces to **operate efficiently and at high productivity levels** minimizing CO_2 emissions per tonne

HCC is expected to become more favorable for steel producers as CO_2 costs rise

CO_2 costs[1]
$/t coke



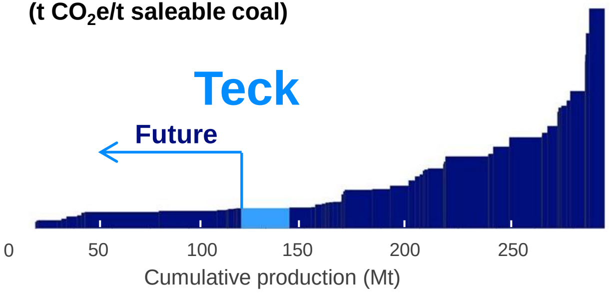
- **Maximizing HCC will be most cost effective** for steel producers given its lower CO_2 emission per unit of steel

Teck's Hard Coking Coal Is Optimally Positioned For a Decarbonizing Future

Teck's HCC has amongst lowest Scope 1 and Scope 2 emissions relative to peers

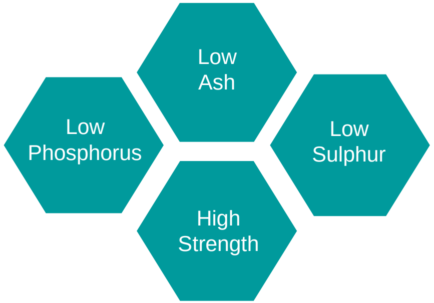
- Teck's emissions intensity is within the **lowest of the commodity range, assisted by access to low carbon sources of electricity in B.C.**
- Teck mines will be **even more cost competitive** with rising CO_2 prices globally

CO_2 Coal Intensity Curve[1] (t CO_2e/t saleable coal)



Highest quality HCC leading to lowest CO_2 emissions in steelmaking

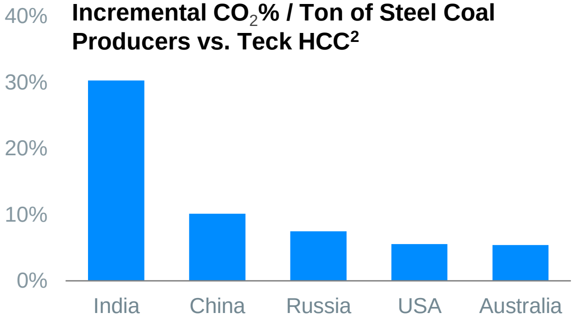
- Teck premium HCC is **amongst the highest quality in the world, benchmarking favorably to premium Australian coking coal** on strength and volatility[2]
- Teck HCC **improves blast furnace efficiency** and **decreases CO_2 emissions per tonne of steel**



Teck's Premium HCC Has Industry Leading Carbon Efficiency

- **Excellent coke strength** properties allowing for high productivity in blast furnaces
- **Low ash and sulphur content** resulting in reduced coke fuel rates required in blast furnaces
- **Favourable coal to coke yield**

Incremental CO_2% / Ton of Steel Coal Producers vs. Teck HCC[2]



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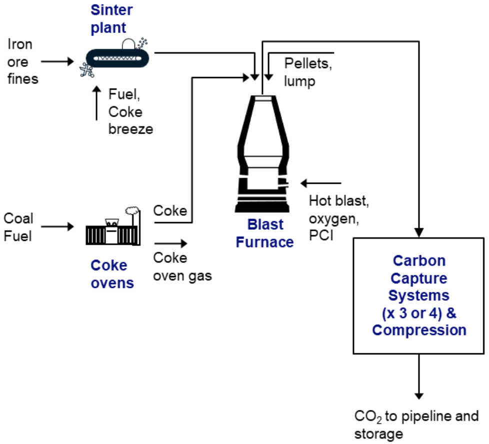
Carbon Capture, Utilization, and Storage (CCUS)

The Blast Furnace + CCUS Process

Plant Setup



Capture & Compression

- Capture of CO_2 from conventional blast furnace (BF) / basic oxygen furnace (BOF) steelmaking operations
- Separation of the CO_2 from other gases using solvents (amine), sorbents and/or membranes
- Compression of CO_2 to a state suitable for transportation and storage

Transportation

- Transportation of the compressed CO_2, via pipelines, trucks or ship

Utilization / Storage

- Utilization options include enhanced oil recovery, building materials, and conversion of CO_2 to chemicals, etc.
- In Storage, CO_2 is injected into deep underground rock formations, depleted oil or gas fields and saline aquifers that trap the CO_2 permanently

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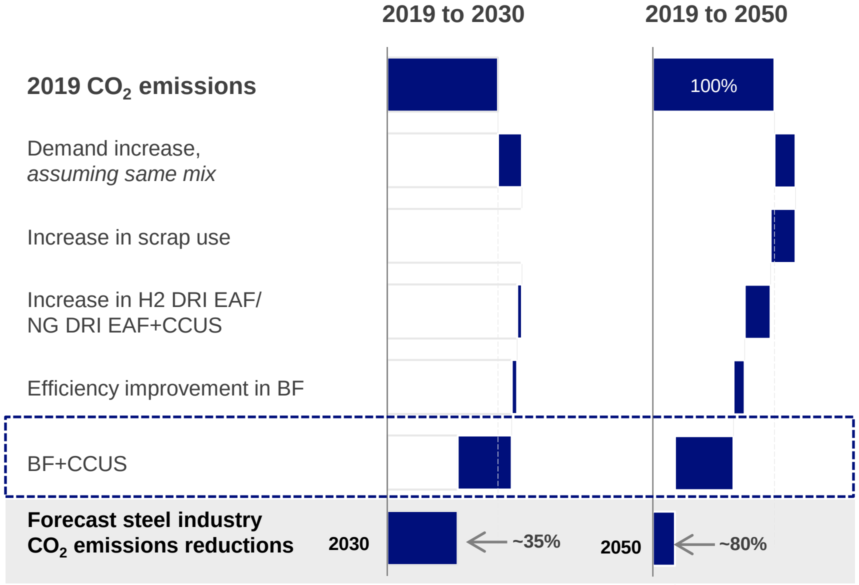
CCUS Decarbonizes up to 80% of Blast Furnace Steelmaking Emissions

Integrated route CO_2 point sources	**Typical CO_2 concentration,** Percent	
Sinter strand	5-10%	✗
Coke oven firing	25%	✓
BF hot blast stoves	25%	✓
Reheat furnace	10%	✓
Power plant @ steel site	20%	✓

~80% of all CO_2 emissions of an integrated steel plant could be captured

Industry wide, BF + CCUS accounts for the majority of the ~80% of steelmaking CO_2 emissions reduction by 2050[1]
Percent of 2019 emissions



Blast Furnace + CCUS will Lead Large-Scale Decarbonization Adoption

Blast Furnace + CCUS is adoption ready

Proven technology in hard-to-abate industries

- CCUS operates in power generation, refining, petrochemicals, agrichemicals, and steel/iron industry

Blast Furnace + CCUS is commercially feasible

- Leverages >US$1 trillion of young installed blast furnace fleet
- Ample global CCUS storage capacity of ~5 trillion tonnes CO_2

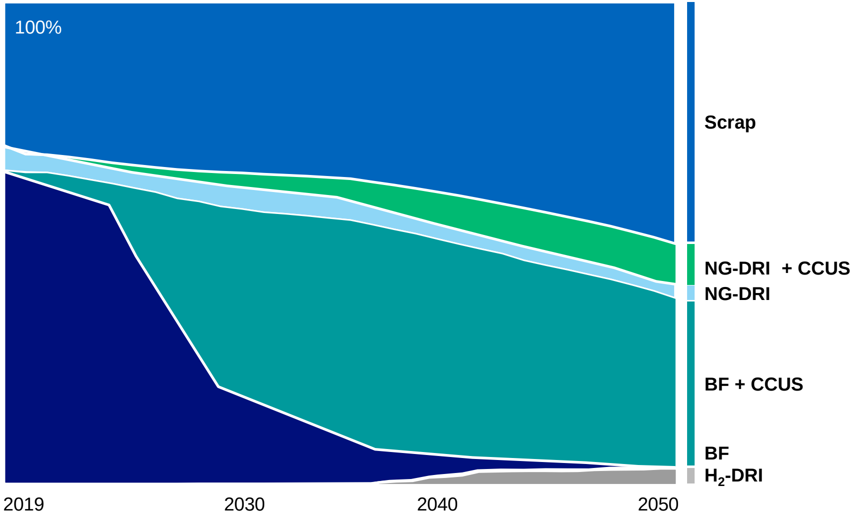
Fastest path to large-scale decarbonization

- >75% of global steel is produced through the blast furnace route
- Requires moderate CO_2 pricing (> US$50/t -$100/t CO_2) to be economic[1]
- Cost reductions achieved with generational learning

Accelerators to adoption

- Large-scale hub and cluster transportation and storage infrastructure will support economies of scale

Blast Furnace + CCUS adoption will lead through 2050[2]



Total Steel Demand (Bt) – Standard Growth Scenario

1.8	2.1	2.1	2.0

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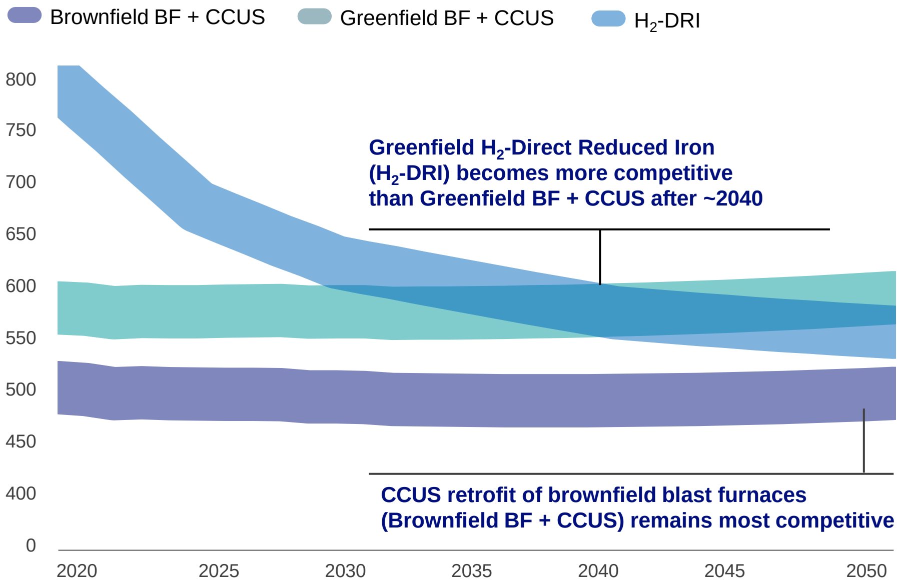
Blast Furnace + CCUS is the Only Technology That can be Adopted with Speed and Scale

Total Cost of Ownership[1] (US$/t liquid steel) China (SDS – 1.7º scenario)



Greenfield H_2-Direct Reduced Iron (H_2-DRI) becomes more competitive than Greenfield BF + CCUS after ~2040

CCUS retrofit of brownfield blast furnaces (Brownfield BF + CCUS) remains most competitive

Levelized Cost of Energy[2] – China (US$c/kWh)

3.2	2.1	1.4	1.1

To make hydrogen steelmaking cost competitive, ample access to low-cost hydrogen (US$1-2/kg) is required. This implies:

Stable supply of renewable power <US$1.5c/KWh

- Significant investment in large-scale renewable infrastructure development that does not exist today
- ~60% lower wind and solar costs

Low-cost, highly-efficient electrolyzers

- Decline in electrolyzer capex by ~80%
- High-capacity scale-up and utilization rates
- Sufficient H2 storage capacity to allow stable and continuous supply

High-grade iron ore pellet availability

- Availability constraints on high-grade iron-ore pellets suitable for DRI will limit H2-DRI adoption beyond 2030

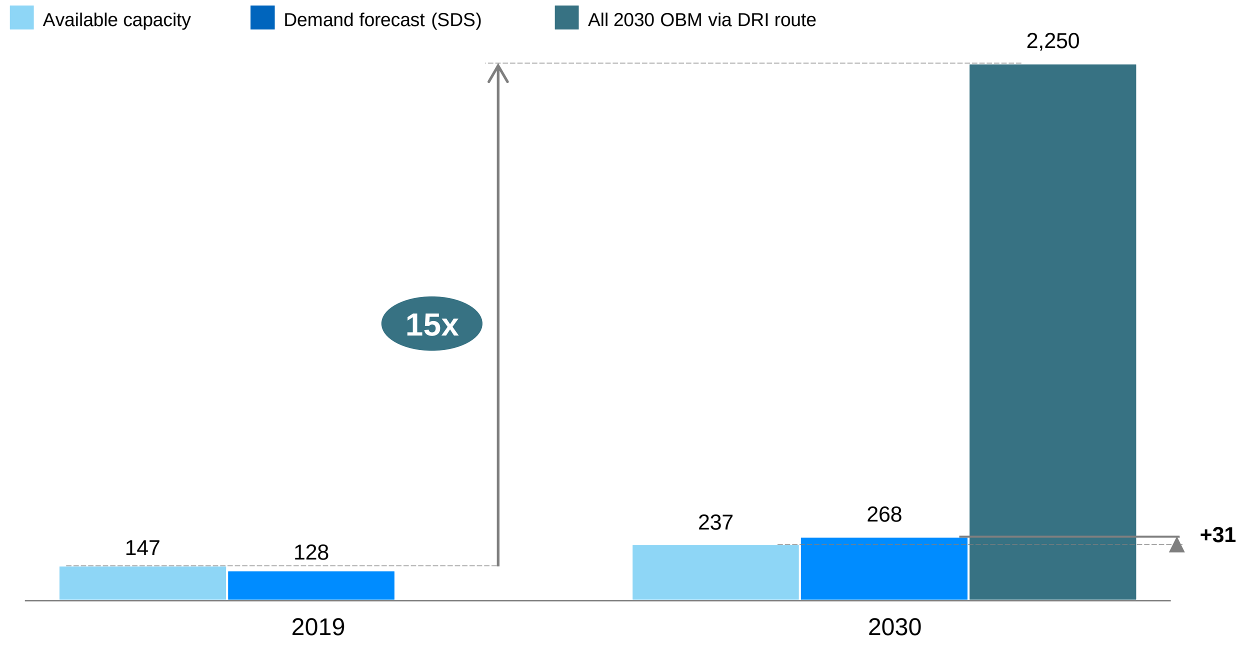
Large-scale green hydrogen adoption is unlikely before 2040

Slow Transition to Green Hydrogen-Based Steel Given the Enormity of Required Inputs

Input needed for one tonne liquid steel in H_2-DRI-EAF	Input needed for all 2030 non-scrap based liquid steel (1,800m tonnes)…	…Exceeds current capacity
50 kg Hydrogen	720 GW Electrolyzer capacity	21 times more than announced capacity today for the entire industry
3.2 MWh Power	5,800 TWh Power	~25% of global power demand today, or ~140% of US total power demand
1.25 t DR pellets	2,250 Mt DR pellets	15 times today’s global DR pellet capacity
450L Water	810BL Water	~2M household yearly water use in the US
	900 New DRI/EAF plants	~12 times the amount of DRI plants in operation today

A Significant Supply Shortage of Hydrogen Steelmaking DR Grade Pellets is Forecast by 2030

Supply & demand balance of direct reduction grade pellets[1]
Projected market balance of DR-grade pellets (Million tonnes)

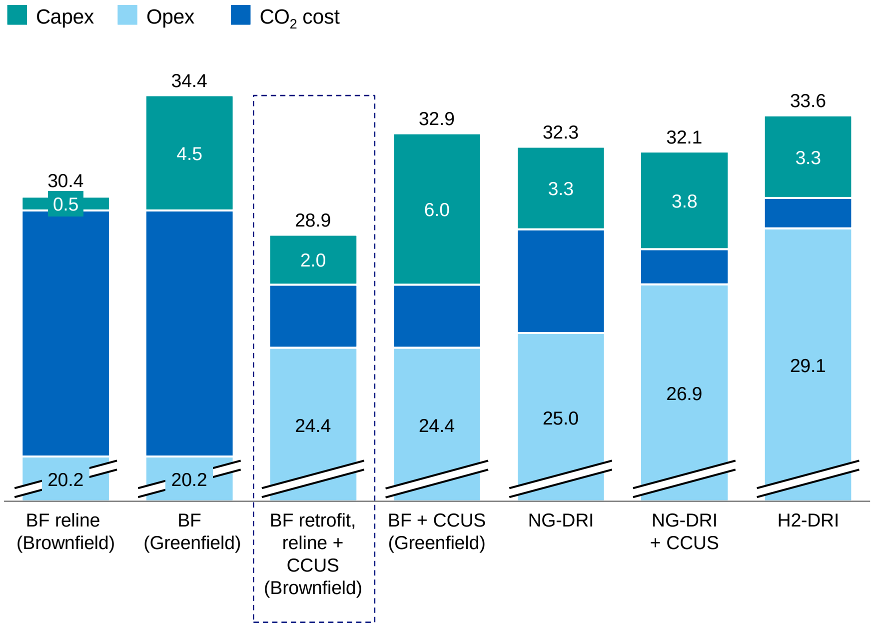


Based on the current demand forecast for DR grade pellets, a deficit of 31M tonnes emerges by 2030

Large-scale hydrogen-based steelmaking would require 15 times today's DR Pellet capacity by 2030

Blast Furnace + CCUS is the Most Cost Competitive Decarbonization Technology

Net present cost of steelmaking technologies[1] China 2030 cost basis, Billion US$ (5mtpa Blast Furnace)



Key economics, 2020

Capex in US$ per annual ton liquid steel

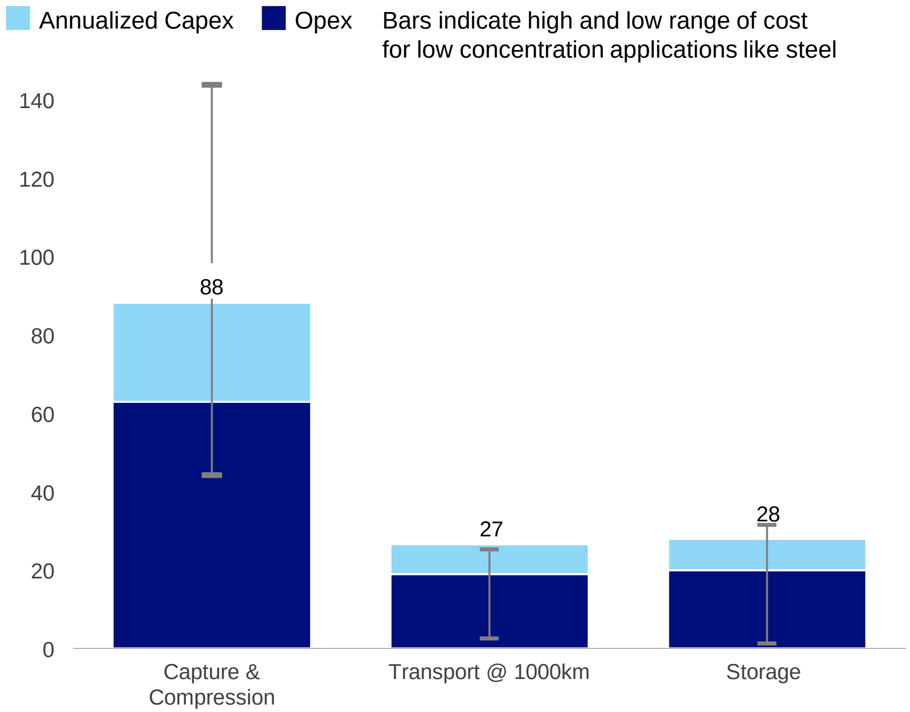
Greenfield coke plant, sinter plant, blast furnace + CCUS	~1,200
Brownfield blast furnace reline only	~100
Brownfield retrofit + CCUS	~300

OPEX in US$ per annual ton of liquid steel

Traditional blast furnace route	~400
Blast furnace + CCUS	~500
CCUS only	~100

Blast Furnace + CCUS – Unit Cost by Process

2020, US$/tonne liquid steel[1]
5mtpa Blast Furnace Facility

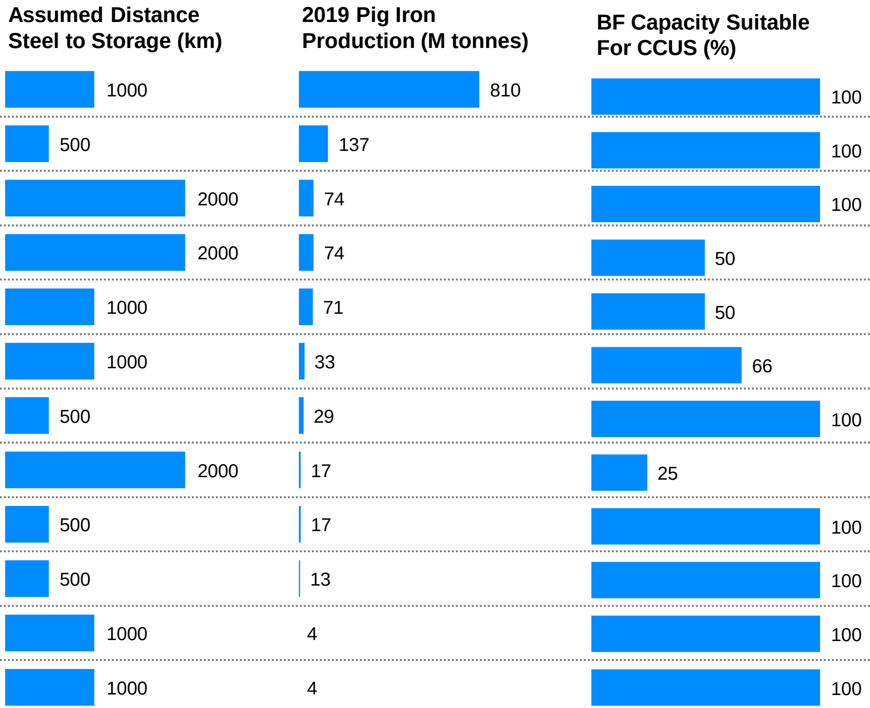


CCUS Cost Drivers

- Carbon capture is typically the highest cost element, **varying by CO_2 concentration** of the source gas
- Transport and storage costs are driven by:
  - Suitable **CO_2 sequestration geolgoical characteristics and capacity** and **extent of monitoring**
  - **Mode of transportation** from blast furnace to sequestration site
  - Proximity to **CCUS hubs**, shared by multiple users and supported by governments to drive down costs (shared transport and storage)

Geological Distances to Sequestration Vary

Assumed Distances for Steel Plants to Storage and Fraction of BF Production Assumed Suitable for CCUS[1]



	Assumed Distance Steel to Storage (km)	2019 Pig Iron Production (M tonnes)	BF Capacity Suitable For CCUS (%)	
China	1000	810	100	NE steel regions close to CCUS, inland steel could leverage on-shore
Developed Asia	500	137	100	Good match Japan, South Korea steel and CCUS
CIS	2000	74	100	Strong historic O&G production storage capacity
India	2000	74	50	Substantial distance across India for some facilities
Western Europe	1000	71	50	Coastal steel is close to CCUS, inland steel mills substantial distances
Latin America	1000	33	66	Some mismatch in BFs vs potential CCUS sites
North America	500	29	100	US BFs close to CCUS, 2 DR plants on Gulf Coast have good access
Eastern Europe	2000	17	25	No storage options in close proximity
Other Asia	500	17	100	Indonesia – good proximity to CCUS
MENA	500	13	100	Good match with historical O&G production
Oceania	1000	4	100	Two BFs in Australia – moderate distance to CCUS sites
Subsaharan Africa	1000	4	100	Moderate distance for two South Africa BF sites

Large-Scale Blast Furnace + CCUS Adoption Has Increasing Technical and Economic Tailwinds

Requirements for large-scale CCUS adoption

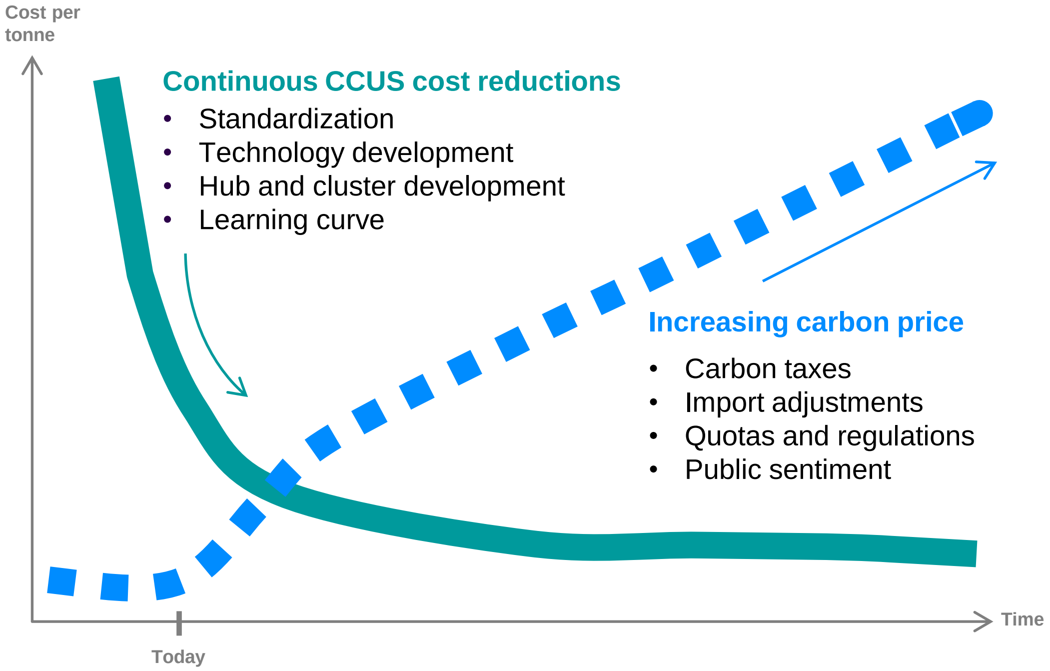
Rapid demonstration of BF+CCUS feasibility

Credible and sustained cost of CCUS < CO_2 price: requires CO_2 pricing of >US\$50/t CO_2 and CO_2 abatement cost of US\$50-100/t CO_2[1] (2020 abatement cost of ~US\$100-150/t CO_2).

Government support (and public acceptance): carbon and tax policy, carbon capture facility and infrastructure development funding

CCUS hub development: Large-scale hub and cluster CO_2 power, transportation, and storage sites that will support economies of scale

Cost of CCUS will decline



Continuous CCUS cost reductions

- Standardization
- Technology development
- Hub and cluster development
- Learning curve

Increasing carbon price

- Carbon taxes
- Import adjustments
- Quotas and regulations
- Public sentiment

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China Will Lead Global CCUS Adoption

Key Factors Driving China's Leadership in CCUS Adoption

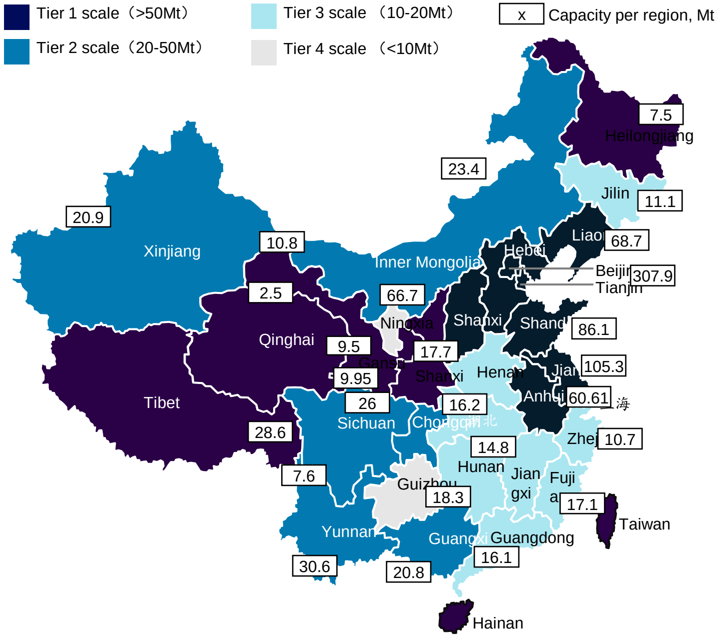
- **China accounts for ~60% of global blast furnace steelmaking**[1] and **>60% of global steelmaking CO_2 emissions**[2] **-** ~93% of steelmaking in China to utilize the blast furnace process[2]
- CCUS leverages China's **>US$1 trillion of existing installed blast furnace fleet**, with more than 260 young blast furnaces (average 10 years) employing more than 1 million people
- China has **ample CCUS storage capacity of up to ~4 trillion tonnes CO_2**[3]**,** CO_2 storage will require transportation infrastructure development

China Carbon Neutrality Goals Support CCUS Adoption

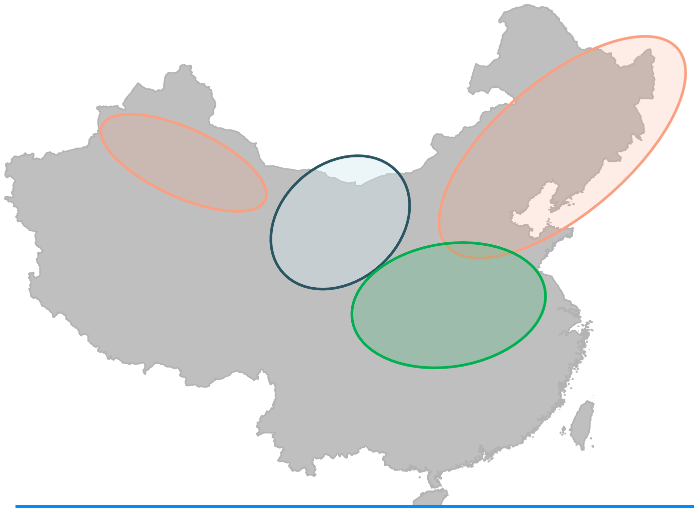
- **China Carbon Neutrality Goals and Ambitions**
  - Government commitment to achieve **carbon emission peak by 2030, and carbon neutrality by 2060**
    - CCUS is the only decarbonization technology that can be adopted fast enough to meet China's 2060 goals
  - Government consultancy proposal to **reduce carbon emissions by 30% from the peak by 2030** (~420 million tons)[4]
- **China Steelmaking Decarbonization**
  - Exploring a steel output limit to **reach peak steelmaking emissions within four years and to reduce steelmaking emissions by 30% by 2030**[5]
  - Several Chinese steelmakers have signaled that they aim to peak their carbon emissions before 2025[6]

Chinese Blast Furnace + CCUS Will Be Driven By Infrastructure Development

China's BF capacity by location, 2019, Mt[1]



Areas with high CO_2 storage potential[2]



🟦 **Saline aquifer** as main storage site
- Inner Mongolia
- Northern Shaanxi

🟩 **Oil field / gas field** as main storage site
- Shanxi
- Shandong
- Henan
- Hebei

🟧 Both **saline aquifer** and **oil field** are available
- Xinjiang
- Northeast China

Southern/Inland blast furnaces will require transportation infrastructure development of up to 1000km to connect to the North-Eastern Storage Fields

Canada: Early Adopter of CCUS

Successful and early adoption of CCUS in Canada include:

- **Boundary Dam CCUS Facility** the world’s first commercial scale post-combustion CCS facility
- **Shell Quest CCS Facility**
- **Whitecap Resource’s Weyburn oil CCS CO_2-EOR**
- **CNRL’s Horizon project CO_2 recovery plant**
- **The Alberta Carbon Trunk Line**

Canada also hosts several leading technology carbon capture companies, including:

- **Svante** next-generation adsorbent-based carbon capture technology
- **Carbon Engineering** direct air capture

The Alberta Canada Trunk Line System

- A large-scale multi-hub carbon capture and storage pipeline
- The Alberta Canada Trunk Line (ACTL) system captures industrial CO_2 emissions from oil refinery and fertilizer facilities, sent to oil and gas reservoirs in Southern Alberta (used for enhanced oil recovery and permanent storage) via a 240km pipeline
- The pipeline can transport up to 14.6 Mt of CO_2 per year with capacity to tie in more CO_2 emissions

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Europe is Focused on Large Scale CCUS Hub And Cluster Infrastructure Development

- **Zero Carbon Humber** and **Net Zero Teesside** are two of the UK's largest industrial CCUS clusters,
- The **Northern Endurance Partnership** will transport and store CO_2 from both clusters in the North Sea
- The combined projects aim to **decarbonize nearly 50% of the UK's industrial cluster emissions**
- **Funded privately and publicly**
- **£800 million** of UK Government funding
- Both projects aim to be **commissioned by 2026**

bp BRITISH STEEL SSE MITSUBISHI HEAVY INDUSTRIES Eni TOTAL drax equinor nationalgrid

CCUS Policy

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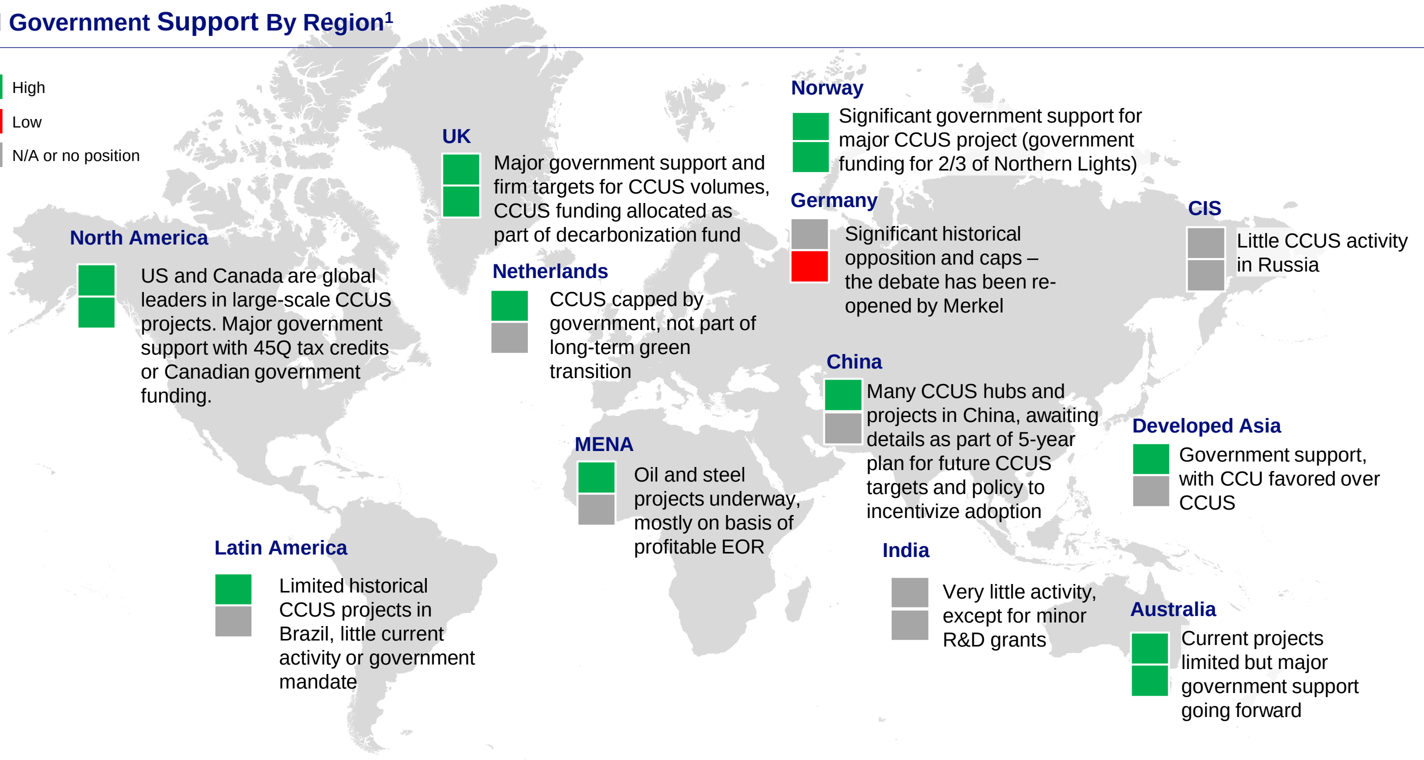
Active Global CCUS Policy Activity Is Underway

CCUS Activity And Government Support By Region[1]



CCUS Activity

Government Support

🟩 High
🟥 Low
⬜ N/A or no position

North America
🟩
🟩
US and Canada are global leaders in large-scale CCUS projects. Major government support with 45Q tax credits or Canadian government funding.

UK
🟩
🟩
Major government support and firm targets for CCUS volumes, CCUS funding allocated as part of decarbonization fund

Netherlands
🟩
⬜
CCUS capped by government, not part of long-term green transition

Norway
🟩
🟩
Significant government support for major CCUS project (government funding for 2/3 of Northern Lights)

Germany
⬜
🟥
Significant historical opposition and caps – the debate has been re-opened by Merkel

CIS
⬜
⬜
Little CCUS activity in Russia

China
🟩
⬜
Many CCUS hubs and projects in China, awaiting details as part of 5-year plan for future CCUS targets and policy to incentivize adoption

MENA
🟩
⬜
Oil and steel projects underway, mostly on basis of profitable EOR

Developed Asia
🟩
⬜
Government support, with CCU favored over CCUS

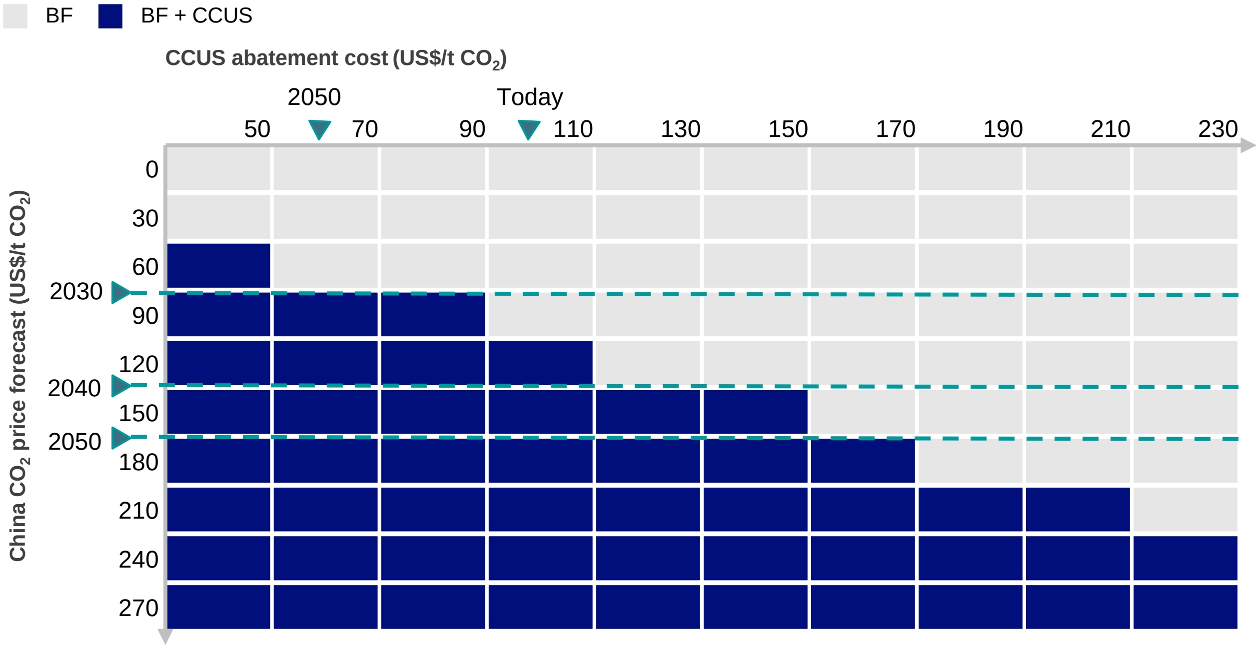
Latin America
🟩
⬜
Limited historical CCUS projects in Brazil, little current activity or government mandate

India
⬜
⬜
Very little activity, except for minor R&D grants

Australia
🟩
🟩
Current projects limited but major government support going forward

Higher Carbon Prices Will Support CCUS Adoption

Steelmaking CCUS abatement cost / carbon tax economic trade-off matrix
China, based on 2030 prices



	50	70	90	110	130	150	170	190	210	230
0	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜
30	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜
60	■	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜
90	■	■	■	⬜	⬜	⬜	⬜	⬜	⬜	⬜
120	■	■	■	■	⬜	⬜	⬜	⬜	⬜	⬜
150	■	■	■	■	■	■	⬜	⬜	⬜	⬜
180	■	■	■	■	■	■	■	⬜	⬜	⬜
210	■	■	■	■	■	■	■	■	■	⬜
240	■	■	■	■	■	■	■	■	■	■
270	■	■	■	■	■	■	■	■	■	■

- **BF+CCUS becomes economic** once the CO_2 price exceeds the CO_2 abatement cost
- The **major risks** to large-scale adoption of BF+CCUS are:
  - **Slower than expected carbon pricing** framework
  - **CCUS costs declining less rapidly than expected** (current forecast ~100 US$/t CO_2 in 2020 and ~60 US$/t in 2050)
  - **Inadequate government support** for CCUS in the areas of carbon policy, funding, social acceptance

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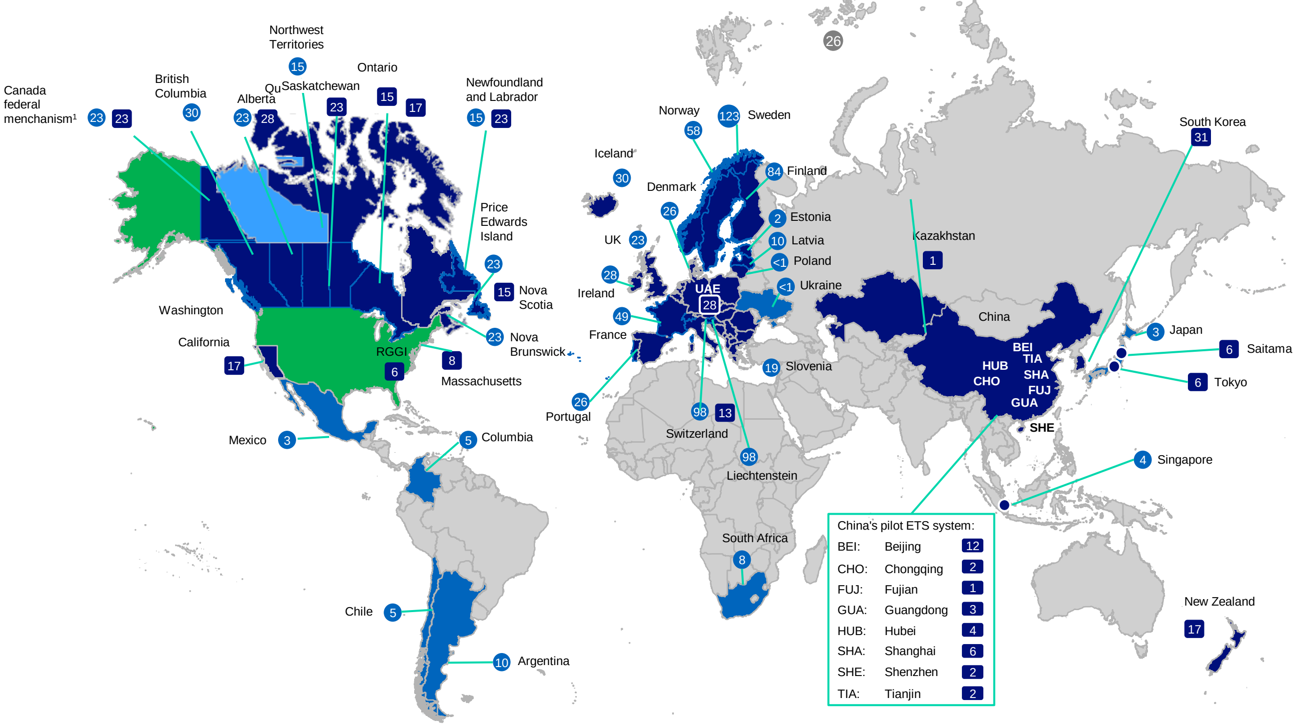
Global Carbon Abatement Policies Take Different Forms

Global carbon emission price applied by country[1]

Prices in US$/tCO$_2$e *May 2020) $

🟦 Established Emissions Trading scheme 🟦 Established Carbon tax 🟩 Proposed legislation



China's pilot ETS system:

BEI:	Beijing	12
CHO:	Chongqing	2
FUJ:	Fujian	1
GUA:	Guangdong	3
HUB:	Hubei	4
SHA:	Shanghai	6
SHE:	Shenzhen	2
TIA:	Tianjin	2

- Globally, **44 countries and 31 provinces or cities operate a carbon pricing scheme**, through a carbon tax and/or an Emissions Trading System (ETS)
- Carbon taxes would need to increase to **~US$300/t by 2050** to achieve the Paris Agreement targets, increasing from $75-100$/t in 2030 to $125-140$/t by 2040 (IEA)
- China is expected to focus initially on an **emissions trading scheme**

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SDS (+1.7ºC) is the Primary Scenario used to Evaluate Steelmaking Technology Economics

Comparable scenarios

+1.5ºC scenario[1]

McKinsey – 1.5ºC scenario

SDS +1.7ºC scenario[1]

Sustainable Development Scenario

IEA – SDS

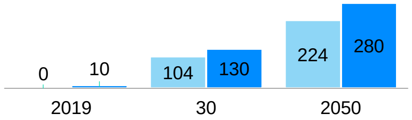
STEPS +2.7ºC scenario[1]

Stated Policies Scenario

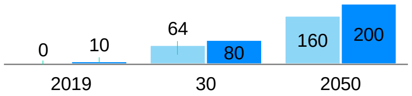
IEA – STEPS

CO$_2$ price[2]
US$/ t CO$_2$

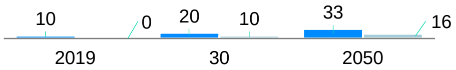
- 🟦 Developing regions
- 🟦 Developed regions



Steel free allowances removed post-CBAT

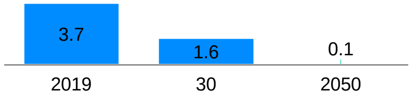


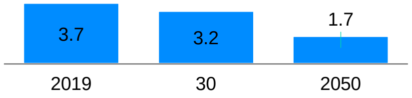
Steel free allowances removed post-CBAT

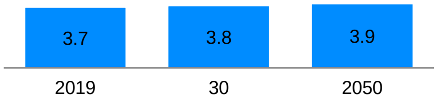


50% free allowances removed

Steel carbon budget[3] (GtCO$_2$)

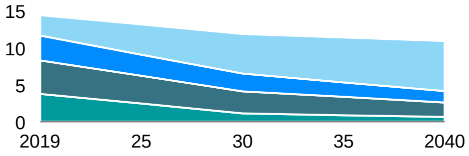


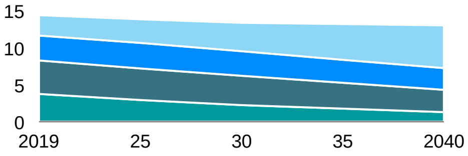


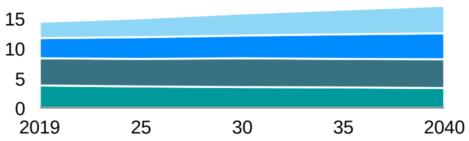


Energy mix
(Btoe)

- 🟦 Other[4]
- 🟦 Natural gas
- 🟦 Oil
- 🟩 Coal

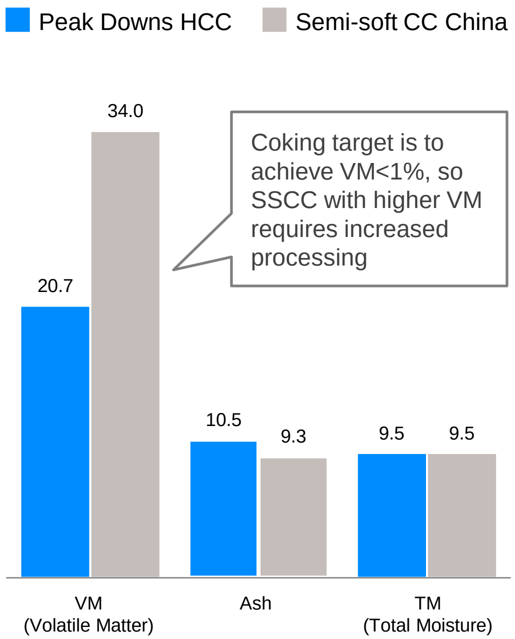






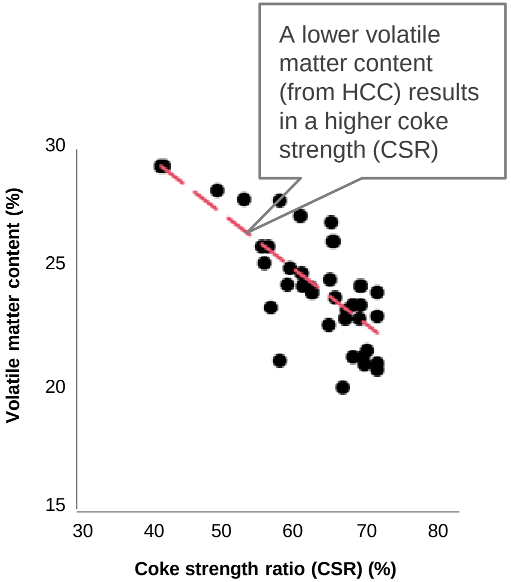
HCC Lower Volatile Matter Content Improves Coke Strength and Reduces CO_2 Emissions

Quality benchmark of HCC vs SSCC%



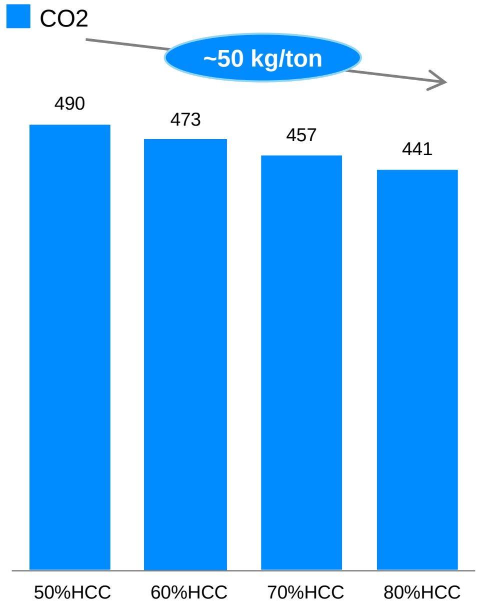
Coking target is to achieve VM<1%, so SSCC with higher VM requires increased processing

Correlation between quality parameters (Coke Strength (CSR) and volatile matter (%)



A lower volatile matter content (from HCC) results in a higher coke strength (CSR)

CO_2 emissions (kg/ton Coke)



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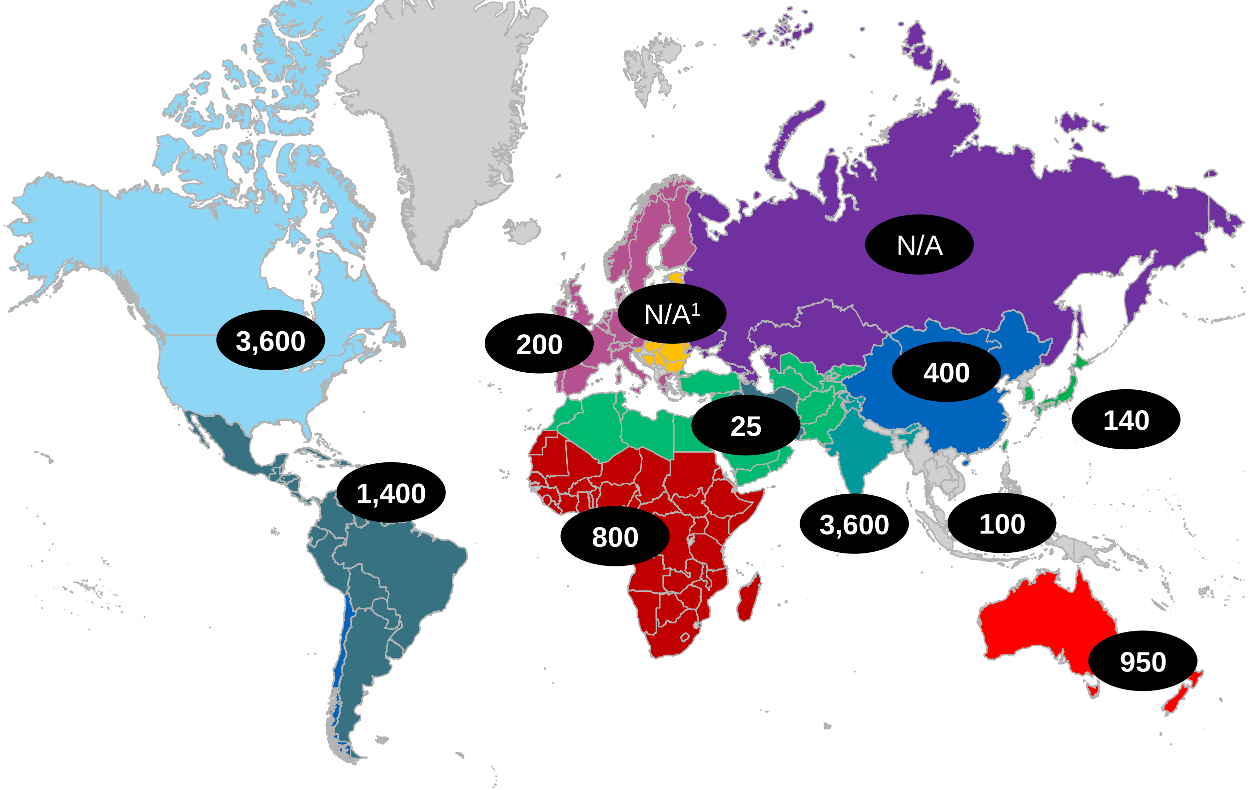
There is Adequate Global CO_2 Storage Capacity

x Years of storage capacity based on regional 2019 total CO_2 emissions and CCS storage estimate



- Global CCS Institute estimates global CCS storage capacity is **~5 trillion tonnes CO_2**[1]
- A typical 10 mtpy integrated steel plant produces **20 mtpy CO_2**
- Historical Oil and Gas production expected to **add significant Storage capacity**

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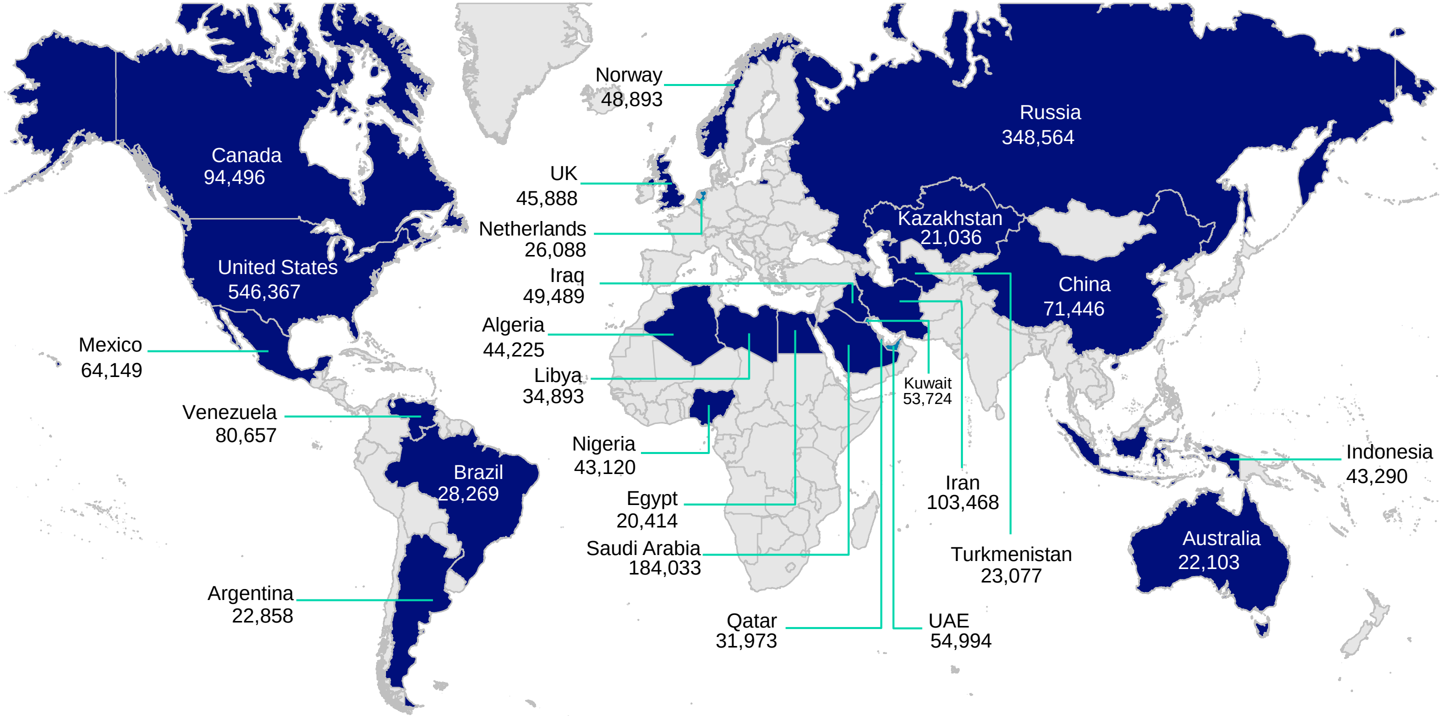
Depleting Oil and Gas Fields Will Add Significant Global CCUS Storage

Million bbl cumulative 1900-2020 for countries >20,000 million bbl[1]



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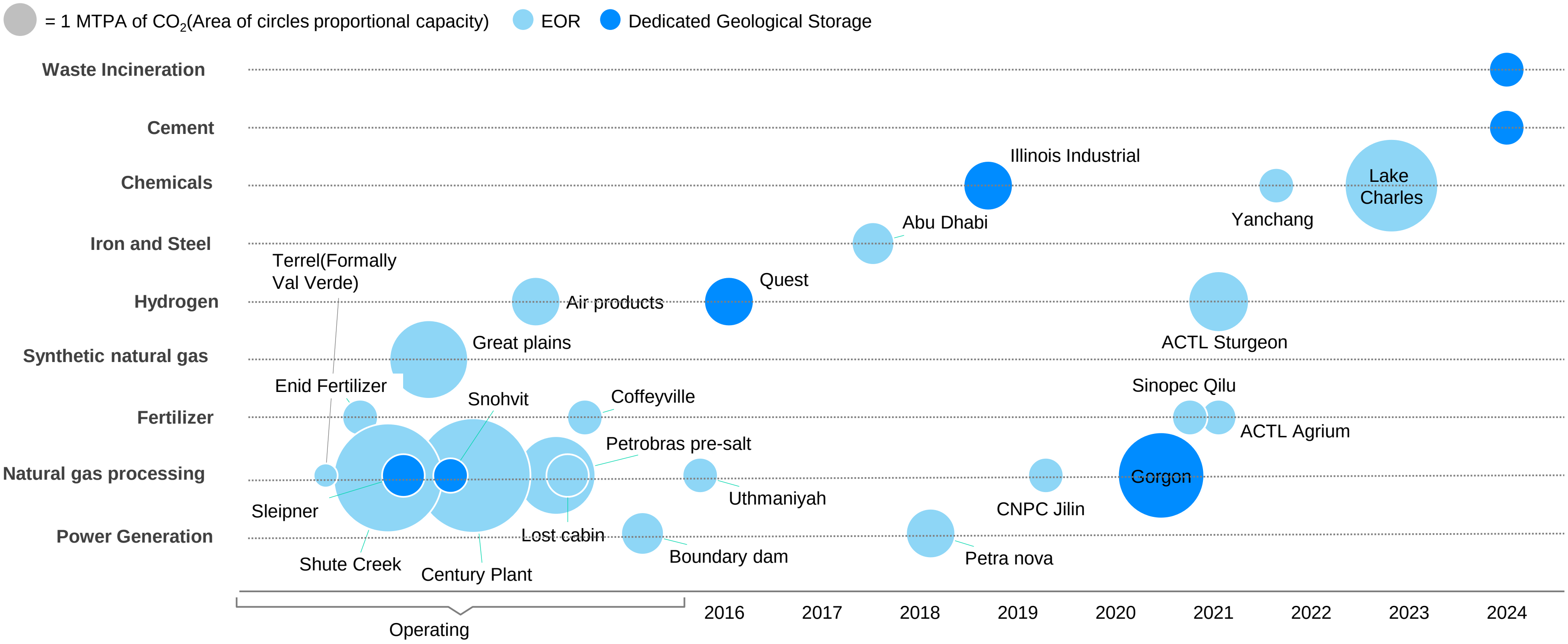
CCUS is a Commercialized Technology in Multiple Hard-to-Abate Sectors

Power and industrial applications of commercial large scale CCUS facilities with actual and expected operation dates up to 2024[1]



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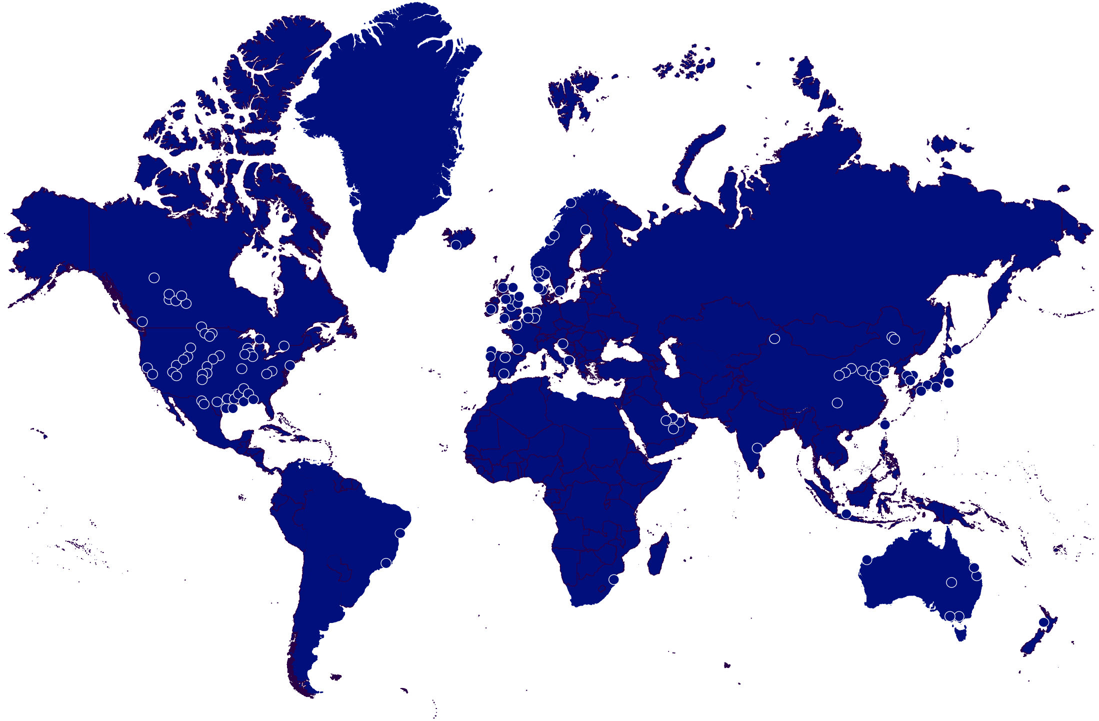
Most Major Steelmaking Regions Are Active in CCUS

CCUS facilities – commercial or demonstration
(includes completed demos or facilities currently shut down)



Major steelmaking regions active in CCUS:

- Northeast Chinese steelmaking concentration is well suited for current CCUS sites
- Many CCUS options for Developed Asia (South Korea and Japan)
- Major activity in Western Europe, with many developing North Sea off-shore hub and cluster options
- American CCUS activity focused on enhanced oil recovery and increasingly storage

Carbon Policy and CCUS Infrastructure Funding Underpin Commercial CCUS Adoption

CCUS Policy, Funding, and Advocacy Leadership[1]

Carbon Policy (carbon pricing and carbon offset incentives)

Tax Policy

Carbon Capture Facility and Infrastructure Development Funding

Successful Government Policy Examples

Canada: Clean Fuel Standard Act, Greenhouse Gas Pollution Act
Norway: Carbon tax enforcement (US$50/t)
Europe: Policy allowing transboundary shipment of CO_2

USA: 45Q Storage Tax Credit (enhanced oil recovery for US$50/t CO_2 or geological storage for US$85/t of CO_2)

Canada: 2021 Federal budget includes proposal for investment tax credit for capital spent on CCS and CCUS projects

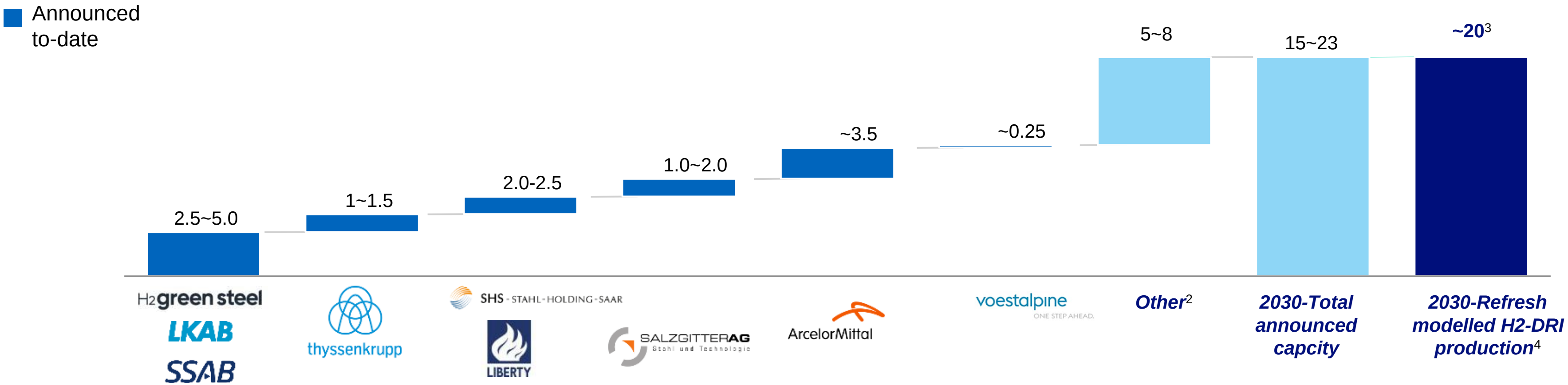
UK/Europe:

- €10 billion CCUS government funding for planning construction and operation of CCUS across the EU
- £800 million Hub and Cluster funding (UK)
- Northern Lights CO_2 transportation and storage (Norway)

Canada: ~C$1.2 billion of federal and provincial funding to-date; recent Federal proposal for C$319 million over 7 years to be allocated to CCUS research, development, and demonstration projects

Hydrogen Steelmaking will Account for Less than ~2% of Ore Based Metallics by 2030

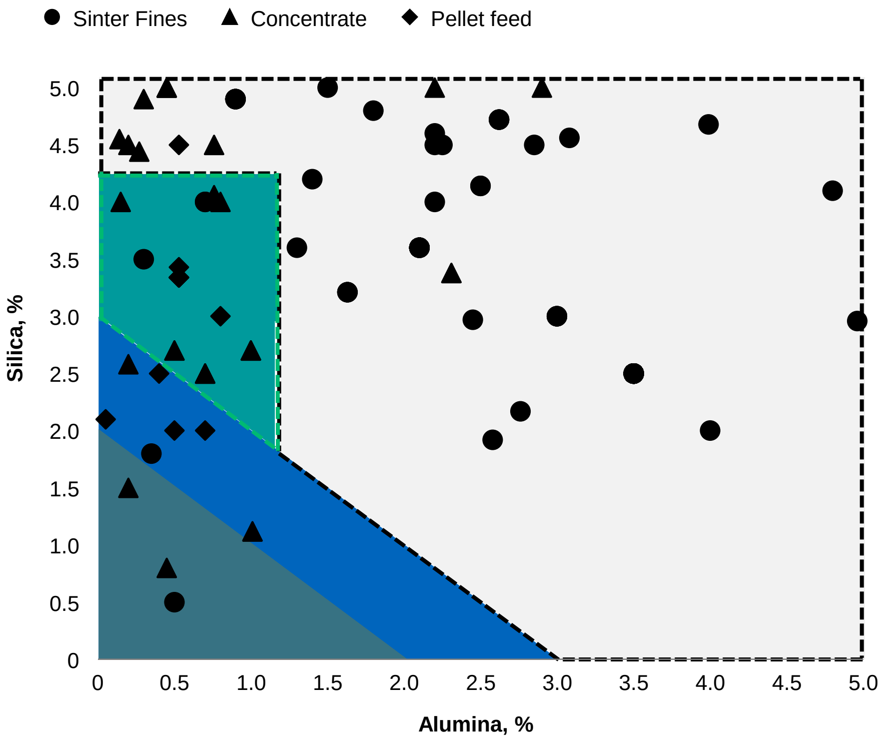
Announced Hydrogen decarbonization steel projects in Europe, supply capacity, till 2030 Mt



Status	Pilot project commissioning	Feasibility study and technical concept	Feasibility study	Feasibility study	Design and funding phase	Pilot phase (DRI production)
Announced start of production[1]	~2025	~2024-2026	~2026/2027	~2026/2027	~2025	~2025

Iron Ore Pellet Quality is a Key Factor Slowing the Advance of Hydrogen DRI

Analysis of iron ore product chemistry[1]



Categorization of iron ore products

		2020 volume
●	Iron ore fines product[2]	1,702 Mt
🟦	Ideal DR-grade product	14 Mt
🟦	Acceptable DR-grade product	30 Mt
🟦	Potential to upgrade to DR-grade[3]	55 Mt
⬚	No potential to upgrade to DR-grade	1,603 Mt

Alumina is the main constraint

Due to its similarity to iron ore, alumina is much more difficult to remove from raw ore during processing than silica. Phosphorus can also be an issue.

Iron content must also be high

To be acceptable for use in DRI, the iron content must be high; ideally > 67%.

Teck Trail Smelter CCUS Pilot Plant Concept

- Scoping study underway for Trail CCUS pilot implementation by mid-2023
- A full-scale Trail CCUS facility would contribute to Teck's Scope 1 2030 and 2050 targets (reduction of up to 150 ktpy CO_2)
- Contributes to Scope 3 2050 ambition of supporting partners in advancing GHG reduction solutions capable of reducing the global carbon intensity of steelmaking 30% by 2030

If developed, Teck's Trail CCUS facility would be the first CCUS operation used in a Canadian mining operation

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Endnotes

Slide 5: Steel is Essential for Economic Growth In a Low-Carbon World
1. Source: WSA, IEA.
2. India (from ~100 Mt in 2019 to 300 Mt in 2050) and South-East Asia (from ~100 Mt in 2019 to ~230 Mt in 2050) IEA SDS Scenario assumptions on CO_2 pricing (~US$0/t CO_2 in 2020 to ~US$160\/t in 2050).

Slide 6: Steel Demand Is Robust Through 2050 in all IEA Scenarios
1. Integrated steel demand model closely approximating the IEA Sustainable Development Scenario.
2. Integrated steel demand model closely approximating the IEA Stated Policies Scenario.

Slide 7: High-Quality Steelmaking Coal Is Required for the Low-Carbon Transition
1. All production volumes included in the forecast are based on a 93% utilization rate of capacity.
2. Includes ramp up of current capacity and projects considered to have a high certainty or probability of completion.
3. Low likelihood projects are assumed to come online from 2030 onwards based on increasing prices surpassing the incentive price required for individual projects at a return on investment of 15%.

Slide 8: Despite Robust Steel Demand, Long-Term Demand for Steelmaking Coal Is Expected to Decline…
1. IEA Sustainable Development Scenario (SDS) +1.7ºC.
2. Comprised of landborne hard coking coal and global semi-soft coking coal.

Slide 9: …But Long-Term Demand for Seaborne Hard Coking Coal Will Remain Robust
1. IEA Sustainable Development Scenario (SDS) +1.7ºC.

Slide 10: Planned Blast Furnace Capacity Development is Well Underway in India and South-East Asia
1. Announced planned blast furnace expansions and greenfield blast furnaces projects, various company announcements.
2. Announced potential blast furnace capacity increases by country. Source: Various Company Announcements, Wood Mackenzie, CRU, Platts, internal analysis As at September 15th, 2021.

Slide 13: Steelmaking Decarbonization Technologies Are Driven By Regional Factors…
1. Middle East and North Africa.

Slide 14: …Characterized by Different Levels of Carbon Abatement And Maturity
1. CO_2 footprint range defined by mix of coke, natural gas and PCI used in regional blast furnaces.

Slide 15: Hard Coking Coal Yields the Highest Decarbonization Efficiency
1. Source: McKinsey MineSpans, based on 60/40% hard coking coal/ soft coking coal blend.

Slide 16: Teck's Seaborne Steelmaking Coal Is Optimally Positioned For a Decarbonizing Future
1. Source: Skarn Associates, 2019.
2. Source: Platts, Wood Mackenzie, internal analysis. Comparison of Teck Elkview HCC to India, China, Russia, USA, and Australia coals by reference to coke ash, coke sulfur and coke CSR (coke strength) values. CO_2% values vary by HCC product by region, with the following values representing the upper limit incremental CO_2 potential.

Slide 19: CCUS Decarbonizes up to 80% of Blast Furnace Steelmaking Emissions
1. In upstream steelmaking, based on IEA SDS scenario assumptions for CO_2 pricing and quotas.

Slide 20: Blast Furnace + CCUS Will Lead Large-Scale Decarbonization Adoption
1. Global CCUS Institute estimates.
2. IEA Sustainable Development Scenario (SDS) +1.7ºC; US$90-110/t CO_2 as of 2020.

Slide 21: Blast Furnace + CCUS is the Only Technology that can be Adopted with Speed and Scale
1. Includes operating costs and annualized capital expenditures.
2. Levelized cost of energy, based on solar power.

Slide 23: A Significant Supply Shortage of Hydrogen Steelmaking DR Grade Pellets is Forecast by 2030
1. Source: Minespans, internal analysis.

Slide 24: Blast Furnace + CCUS is the Most Cost Competitive Decarbonization Technology
1. IEA SDS 1.5º CO_2 price of ~US$60 in 2030, increasing to 160 US$/t by 2050.

Slide 25: Blast Furnace + CCUS – Unit Cost By Process
1. Source: Minespans; CCS costs are the median of reported prices for hard-to-capture industrial processes.

Slide 26: Geological Distances to Sequestration Vary
1. Source Global CCS Institute.

Slide 27: Large-Scale Blast Furnace + CCUS Adoption Has Increasing Technical and Economic Tailwinds
1. IEA Sustainable Development Scenario (SDS) +1.7ºC; US$90-110/t CO_2 as of 2020; US$50-80/t by 2050, forecasts learning curve cost improvements.

Slide 28: China Will Lead Global CCUS Adoption
1. World Steel in Figures 2021: 2021.07.23: 57% in 2020.
2. "China's steelmakers need cleaner process to put climate goals in reach,", South China Morning Post.
3. "China Status of CO_2 Capture, Utilization and Storage (CCUS) 2021 — China's CCUS pathways".
4. Economic Information Daily reported in March 2021.
5. China Metallurgical Industry Planning and Research Institute.
6. Economic Information Daily, March 2021, Source: SenecaESG.

Slide 29: Chinese Blast Furnace + CCUS Will be Driven by Infrastructure Development
1. Source: Sxcoal, Mysteel, McKinsey.
2. Source: Asia Development Bank, VDEH, internal analysis.

Slide 33: Active Global CCUS Policy Activity Is Underway
1. Sources: Global CCS Institute 2020, US Department of Energy, MIT Carbon Capture and storage Database, Petrobras, Northern Lights, EnergyPost.EU, Japan CCS Company, Climate Change News, Global Compliance News, Chevron, Frontiers in Energy Research.

Slide 34: Higher Carbon Prices Will Support CCUS Adoption
1. Includes operating costs and annualized capital expenditures.

Slide 35: Global Carbon Abatement Policies Take Different Forms
1. Source: 14CE - Institute for climate economics with data from ICAP, World bank, Government officials and public information, May 2020.

Slide 37: SDS (+1.7ºC) is the Primary Scenario used to Evaluate Steelmaking Technology Economics
1. Global warming potential by 2100 ranges for SDS between 1.7-1.8ºC and STEPS 2.5-3.0ºC.
2. Marginal CO_2 cost required for steel de-carbonization underlying the scenario. In line with BHP 1.5ºC scenario and IEA's SDS and STEPS scenarios.
3. Share of direct and indirect emissions attributed to the steel industry based on stated decarbonization scenarios.
4. Includes solar, wind, hydro, nuclear, bioenergy, other renewables.

Endnotes

Slide 38: HCC Lower Volatile Matter Content Improves Coke Strength (CSR) and Reduces CO_2 Emissions

1. Source: SBB Platts coal specification guide, expert interview, VDEH coke database, internal analysis; Coking by different share mix of HCC vs. SSCC.

Slide 39: There is Adequate Global CO_2 Storage Capacity

1. Source: Global CCS Institute.

Slide 40: Depleting Oil and Gas Fields Will Add Significant Global CCUS Storage

1. Source: Rystad, Global CCS Institute; subject to confirmed suitability for geological CO_2 storage sites.

Slide 41: CCUS is a Commercialized Technology in Multiple Hard-to-Abate Sectors

1. Source: Carbonbrief.org, Global CCS Institute.

Slide 42: Most Major Steelmaking Regions Are Active in CCUS

1. Source: Global CCS Institute 2020 report.

Slide 43: Carbon Policy and CCUS Infrastructure Funding Underpin Commercial CCUS Adoption

1. Source: Global CCS Institute 2020 report.

Slide 44: Hydrogen Steelmaking will Account for Less than ~2% of Ore Based Metallics by 2030

1. Production ramp-up potentially not fully carbon-neutral.
2. Other refers to several other projects that could add 5-8 Mt including in the Americas and Middle East.
3. DRI production is calculated based on Fe content at 94.45% with 19Mt DRI Fe unit production output from model.
4. Met coal demand model updated to capture H2-based green steel projects announced by steel players, based primarily in Europe.

Slide 45: Iron Ore Pellet Quality is a Key Factor Slowing the Advance of Hydrogen DRI

1. Source: Minespans.
2. Includes sinter fines, concentrates and pellet feeds in MineSpans database. Excludes lump.
3. Includes mines with Fe > 65%; may include flotation circuits.