Examples of how partnerships between actors in the value chain can enable the transformation of the steel industry

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Our purpose
To bring people and resources together to build a better world
BHP has a Climate Transition Action Plan (CTAP) with targets, goals and commitments

- Operational greenhouse gas (GHG) emissions targets and goals for the medium- and long-term. We met our short-term target for FY2022.

- Value chain GHG emissions targets and goals for the medium- and long-term.

- Assessing capital alignment with a 1.5°C world and the transition to a low-carbon economy.

- A position on just transition for the environment, our communities and workforce.

- Strengthening our policy engagement.
Value chain (Scope 3) GHG emissions

Medium-term (2030) goals\(^1\) – on track

- To support industry to develop technologies and pathways capable of 30 per cent emissions intensity reduction in integrated steelmaking, with widespread adoption expected post 2030.
- To support 40 per cent emissions intensity reduction of BHP-chartered shipping of BHP products.

Long-term goal\(^1\)

- We are pursuing the long-term goal of net zero Scope 3 GHG emissions by 2050. Achievement of this goal is uncertain, particularly given the challenges of a net zero pathway for our customers in steelmaking, and we cannot ensure the outcome alone.

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1 Refer to the full description of BHP’s climate change targets and goals, including essential definitions, assumptions and caveats, at bhp.com/climate.
2 Subject to the availability of technology, supply, safety standards, and the establishment of reasonable thresholds for price premiums.
BHP’s Climate Transition Action Plan

A framework to discuss our strategy and engagement

Control
Areas where the decisions we take can have a direct impact on emissions
e.g. changing how we operate, our supplier selection criteria, improving our product quality

Partner
Areas where we can partner with customers, suppliers and others to drive outcomes
e.g. accessing low carbon technology for our operations, collaborating to support commercialisation of low or zero carbon solutions

Influence
Areas where we can provide thought leadership to influence industry emissions
e.g. through sharing knowledge and our climate story with industry, policy advocacy, standards & certifications

FY2022
Scope 3
Downstream
385Mt CO₂-e

Control
- Product quality
- Product technical support
- Product placement
- Our shipping selection criteria
- Our portfolio

Partner
- Partnering on low emission technologies
- BHP Ventures
- Supply chain traceability

Scope 3
Upstream
16Mt CO₂-e

Control
- Our supplier selection criteria

Partner
- Collaborate on carbon neutral solutions

Scope 2
3Mt CO₂-e

Control
- How we operate

Scope 1
9Mt CO₂-e

Partner
- Ensuring availability of solutions

https://www.bhp.com/sustainability/climate-change
BHP’s guiding framework: Steel decarbonisation in three stages

Regions would transit through these stages at different rates, based on local conditions faced by steel producers

**Optimisation stage**
Potential for up to 20% CO₂ reduction vs. BAU

Incremental improvements in raw materials and process conditions for the integrated steelmaking route

- Raw Material Quality
- Energy Optimisation / Efficiency
- Technology Improvements

**Transition stage**
Potential for 30-60% CO₂ reduction vs. BAU

Modifications to Blast Furnace (BF) – Basic Oxygen Furnace (BOF) route, increased use of renewable energy and installation of low carbon technologies

- Low Carbon Fuels
- Blast Furnace Modifications
- Carbon Capture

**Green end state**
Potential for >80% CO₂ reduction vs. BAU

Low carbon technologies have matured and cost competitive for development at scale

- Modified BF with CCUS
- Direct Reduction with Green Hydrogen
- Electric Steelmaking
- Other New Technologies
Differentiated regional steel decarbonisation pathways

Key enablers are policy, supply of renewable power and carbon storage capacity, age and scale of blast furnace fleet

<table>
<thead>
<tr>
<th>Optimisation &amp; Transition</th>
<th>BF optimisation</th>
<th>Gas DRI</th>
<th>DRI-EF</th>
<th>Electrolysis</th>
<th>Green End State</th>
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<tbody>
<tr>
<td><strong>EU</strong></td>
<td>2020</td>
<td>2035</td>
<td>2050</td>
<td></td>
<td>Policy-supported transition drive major producers into hydrogen DRI-EF &amp; age of installed capacity</td>
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<td></td>
<td>Scrap nationalism for more EAF; gas-based DRI ramp-up as the Transition stage</td>
<td>Scrap is a steady passive abatement lever</td>
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<td>Aging blast furnaces to be retired in the coming 1-2 decades</td>
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<td><strong>China</strong></td>
<td>2020</td>
<td>2035</td>
<td>2050</td>
<td></td>
<td>Modified BF + CCUS a key path given scale &amp; age of installed capacity</td>
</tr>
<tr>
<td></td>
<td>Opportunities for better raw material quality and efficiency gains</td>
<td>Scrap is a steady passive abatement lever</td>
<td></td>
<td>Other pathways /technologies in the mix</td>
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<td><strong>Developed APAC</strong></td>
<td>2020</td>
<td>2035</td>
<td>2050</td>
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<td>Super large-sized furnaces preserved for Modified BF + CCUS</td>
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<td></td>
<td>Limited potential for raw material or process efficiency optimisation</td>
<td>Comprehensive decarbonisation roadmap for Modified BF and transition to DRI-EF</td>
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<td>Lack of renewable power and carbon storage resource driving exploration of carbon transport and DRI in overseas markets</td>
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<td></td>
<td>Loss in competition for export markets likely</td>
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<tr>
<td><strong>India / ASEAN</strong></td>
<td>2020</td>
<td>2035</td>
<td>2050</td>
<td></td>
<td>The region with perhaps the youngest modern BF fleet by 2050</td>
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<td></td>
<td>Build / expand modern BF fleet to replace sub-standard coal-based DRI (in India) and induction furnaces (in ASEAN)</td>
<td>Exploration of alternative iron-making techs to replace fragmented coal RI-EAF segment</td>
<td></td>
<td>CCU options developed with lack of conventional storage</td>
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<td>Local leaders to make decarbonisation efforts ahead of national pledges (2060-70)</td>
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4 October 2022
Partnerships with customers and other industry leaders

Looking to scale modified Blast Furnace projects, engage research and technology providers to de-risk alternate pathways

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<tr>
<th>Customer Partnerships</th>
<th>Research</th>
<th>Ventures</th>
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<tr>
<td>Partnerships with 5 key customers ~13% of reported global steel production</td>
<td>Fundamental and industrial programs in Australia, China, North America and Europe Leading research institutes, industrial consultants and technology providers</td>
<td>Investing in green end state technologies</td>
</tr>
<tr>
<td>Test, design and scale Modified BF, CCUS and DRI-EF plant trials</td>
<td>Optimise raw material performance in Modified blast furnace Develop DRI-EF processes for Pilbara ores</td>
<td>Test electrolysis in concept then assess for scale up</td>
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<td>Sign MOUs, scope core projects</td>
<td>Start exploratory test work &amp; concept studies</td>
<td>Initial investments &amp; lab testing</td>
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<tr>
<td>Complete feasibility studies &amp; test work</td>
<td>Support plant trials &amp; product performance</td>
<td>Pilot campaigns with BHP ores</td>
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<tr>
<td>Plan and execute plant trials</td>
<td>Explore demo plant options</td>
<td>Assess scale up options</td>
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4 October 2022
Partnering with key steelmakers across the world

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<tr>
<th>China Baowu</th>
<th>JFE Steel</th>
<th>HBIS Group</th>
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<tr>
<td>• MOU signed in November 2020</td>
<td>• MOU signed in February 2021</td>
<td>• MOU signed in March 2021</td>
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**POSCO Group**

• MOU signed in October 2021


**Tata Steel**

• MOU signed in July 2022
Next steps for how we will progress partnerships

We intend to progress our customer partnerships over three phases:

1. Conduct feasibility studies or laboratory/bench-scale research and development;
2. Pilot-scale trials, where we test potential solutions to key technical challenges;
3. Trials at customer plants.

In line with our goals, we intend to progress projects that in aggregate have the potential to deliver a 30 per cent emissions intensity reduction if adopted at scale post-2030.

We will also continue exploring opportunities for other partnerships that are complementary to our geographic or technology priorities, or that can help make existing projects more effective and efficient.