



**BHP**

**Climate  
Change  
Report  
2020**

**Bringing people and resources  
together to build a better world**

# BHP

## Our Charter

**We are BHP,  
a leading global resources company.**

### Our Purpose

To bring people and resources together to build a better world.

### Our Strategy

Our strategy is to have the best capabilities, best commodities and best assets, to create long-term value and high returns.

### Our Values

#### Sustainability

Putting health and safety first, being environmentally responsible and supporting our communities.

#### Integrity

Doing what is right and doing what we say we will do.

#### Respect

Embracing openness, trust, teamwork, diversity and relationships that are mutually beneficial.

#### Performance

Achieving superior business results by stretching our capabilities.

#### Simplicity

Focusing our efforts on the things that matter most.

#### Accountability

Defining and accepting responsibility and delivering on our commitments.

### We are successful when:

Our people start each day with a sense of purpose and end the day with a sense of accomplishment.

Our teams are inclusive and diverse.

Our communities, customers and suppliers value their relationships with us.

Our asset portfolio is world-class and sustainably developed.

Our operational discipline and financial strength enables our future growth.

Our shareholders receive a superior return on their investment.



**Mike Henry**  
Chief Executive Officer

February 2020

## The Climate Change Report 2020 is available at [bhp.com](http://bhp.com).

BHP Group Limited. ABN 49 004 028 077. Registered in Australia. Registered office: 171 Collins Street, Melbourne, Victoria 3000, Australia. BHP Group Plc. Registration number 3196209. Registered in England and Wales. Registered office: Nova South, 160 Victoria Street London SW1E 5LB United Kingdom. Each of BHP Group Limited and BHP Group Plc is a member of the Group, which has its headquarters in Australia. BHP is a Dual Listed Company structure comprising BHP Group Limited and BHP Group Plc. The two entities continue to exist as separate companies but operate as a combined group known as BHP.

The headquarters of BHP Group Limited and the global headquarters of the combined Group are located in Melbourne, Australia. The headquarters of BHP Group Plc are located in London, United Kingdom. Both companies have identical Boards of Directors and are run by a unified management team. Throughout this publication, the Boards are referred to collectively as the Board. Shareholders in each company have equivalent economic and voting rights in the Group as a whole.

In this Climate Change Report (this Report), the terms 'BHP', the 'Company', the 'Group', 'our business', 'organisation', 'we', 'us', 'our' and 'ourselves' refer to BHP Group Limited, BHP Group Plc and, except where the context otherwise requires, their respective subsidiaries as defined in note 13 'Related undertakings of the Group' in section 5.2 of BHP's Annual Report 2020 available online at [bhp.com](http://bhp.com). Those terms do not include non-operated assets. This Report covers BHP's assets (including those under exploration, projects in development or execution phases, sites and closed operations) that have been wholly owned and/or operated by BHP and that have been owned as a joint venture<sup>(1)</sup> operated by BHP (referred to in this Report as 'operated assets' or 'operations') during the period from 1 July 2019 to 30 June 2020. Our functions are also included.

BHP also holds interests in assets that are owned as a joint venture but not operated by BHP (referred to in this Report as 'non-operated joint ventures' or 'non-operated assets'). Notwithstanding that this Report may include production, financial, greenhouse gas emissions and other information from non-operated assets, non-operated assets are not included in the BHP Group and, as a result, statements regarding our operations, assets and values apply only to our operated assets unless stated otherwise.

(1) References in this Climate Change Report to a 'joint venture' are used for convenience to collectively describe assets that are not wholly owned by BHP. Such references are not intended to characterise the legal relationship between the owners of the asset.

## Forward looking statements

This Report contains forward looking statements, including, but not limited to: statements regarding trends in commodity prices and supply and demand for commodities; plans, strategies and objectives of management; assumed long-term scenarios; potential global responses to climate change; regulatory and policy developments; the development of certain technologies; the potential effect of possible future events on the value of the BHP portfolio and the plans, strategies and objectives of management.

Forward looking statements may be identified by the use of terminology, including, but not limited to, 'intend', 'aim', 'project', 'see', 'anticipate', 'expect', 'estimate', 'plan', 'objective', 'believe', 'expect', 'may', 'should', 'will', 'would', 'continue' or similar words. These statements discuss future expectations concerning the results of assets or financial conditions, or provide other forward looking information. In particular, such statements may include, but are not limited to, statements that relate to the purpose, goals, targets, plans and objectives of BHP, assumptions made in energy, and other forms of environmental transition scenarios, as well as statements about how we run our business, including our work with contractors and partners.

The forward looking statements in this Report are based on the information available as at the date of this Report and/or the date of the Group's planning processes or scenario analysis processes. There are inherent limitations with scenario analysis and it is difficult to predict which, if any, of the scenarios might eventuate. Scenarios do not constitute definitive outcomes for us. Scenario analysis relies on assumptions that may or may not be, or prove to be, correct and may or may not eventuate, and scenarios may be impacted by additional factors to the assumptions disclosed.

Additionally, forward looking statements are not guarantees or predictions of future performance, and involve known and unknown risks, uncertainties and other factors, many of which are beyond our control, and which may cause actual results to differ materially from those expressed in the statements contained in this Report. BHP cautions against reliance on any forward looking statements or guidance.

For example, future revenues from our operations, projects or mines described in this Report will be based, in part, upon the market price of the minerals, metals or petroleum produced, which may vary significantly from current levels. These variations, if materially adverse, may affect the timing or the feasibility of the development of a particular project, the expansion of certain facilities or mines, or the continuation of existing operations.

There are a number of other factors that may have an adverse effect on our results or operations, including those identified in the risk factors discussed in BHP's filings with the US Securities and Exchange Commission (the 'SEC') (including in Annual Reports on Form 20-F) which are available on the SEC's website at [www.sec.gov](http://www.sec.gov).

Except as required by applicable regulations or by law, BHP does not undertake any obligation to publicly update or review any forward looking statements, whether as a result of new information or future events. Forward looking statements speak only as of the date of this Report or the date planning process assumptions or scenario analysis assumptions were adopted, as relevant.

Past performance cannot be relied on as a guide to future performance.

## Agreements for sale of Onshore US

On 28 September 2018, BHP completed the sale of 100 per cent of the issued share capital of BHP Billiton Petroleum (Arkansas) Inc. and 100 per cent of the membership interests in BHP Billiton Petroleum (Fayetteville) LLC, which held the Fayetteville assets, for a gross cash consideration of US\$0.3 billion.

On 31 October 2018, BHP completed the sale of 100 per cent of the issued share capital of Petrohawk Energy Corporation, the BHP subsidiary that held the Eagle Ford (being Black Hawk and Hawkville), Haynesville and Permian assets, for a gross cash consideration of US\$10.3 billion (net of preliminary customary completion adjustments of US\$0.2 billion).

While the effective date at which the right to economic profits transferred to the purchasers was 1 July 2018, the Group continued to control the Onshore US assets until the completion dates of their respective transactions. In addition, the Group provided transitional services to the buyer, which ceased in July 2019.

Information in this Report relating to the Group has been presented on a Continuing and Discontinued operations basis to include the contribution from Onshore US assets prior to completion of their sale, unless otherwise stated.

## No offer of securities

Nothing in this Report should be construed as either an offer or a solicitation of an offer to buy or sell BHP securities in any jurisdiction, or be treated or relied upon as a recommendation or advice by BHP.

## Reliance on third party information

The views expressed in this Report contain information that has been derived from publicly available sources that have not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of the information. This Report should not be relied upon as a recommendation or forecast by BHP.

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# Chief Executive Officer introduction



The commodities BHP produces are essential in the daily lives of people around the world. They support global economic development and prosperity. BHP's long-term success is dependent on a stable world with sustainable economic growth and on a continued ability to attract people, capital and access to the resources the world needs. This is reflected in our purpose, 'To bring people and resources together to build a better world', and it informs our approach on the critically important topic of climate change.

The commitments, actions and insights set out in this report build upon a strong and extended track record of leadership and action on climate change. This has included efforts to reduce greenhouse gas emissions in our operations, advocacy for effective climate change policy, building resilience into our operated assets and incorporating climate change considerations into our strategic thinking and portfolio decisions.

### Climate change leadership and actions aligned to the Paris Agreement

We are committed to continuing to reduce emissions in our operations and to our goal of achieving net zero operational emissions by 2050. We are on track to achieve our current short-term target to maintain our FY2022 total operational GHG emissions at or below FY2017 levels<sup>(2)</sup>, while we continue to grow our business. As set out in this report, we are accelerating our efforts and will take the necessary action to reduce our Scope 1 and Scope 2 emissions by at least 30 per cent from FY2020 levels<sup>(2)</sup> by 2030. We have established agreements for 100 per cent renewable electricity use in our Chilean operations, and for a portion of our electricity needs in Australia to also be met by renewables. We established a US\$400 million Climate Investment Program to invest more resources in low emissions technologies and other activities that can decarbonise our operations and value chain.

While the commodities BHP produces are essential for the world, we recognise that greenhouse gas emissions are generated in their transport and use. BHP is committed to working with customers, transportation providers and others in the value chain, to reduce the emissions intensity of their processes (Scope 3 emissions). This is all the more important given that these emissions are significantly higher than those from BHP's operations. The actions we are taking are focused in areas where our support can make the biggest difference.

We are further strengthening accountability for climate change leadership within our business. As climate change is a material governance issue and a strategic issue, we have reinforced the link between climate change performance measures and executive remuneration.

We are committed to lead the evolution of our industry. We have set a Paris-aligned target and goal for decarbonisation of our operations. And we have announced goals to drive action not just in our business, but across sectors beyond ours. Not only that, but by seeking to work in partnership with others, we increase the chance that collectively, we achieve the outcome to which we all aspire. And we will continue to advocate for action as BHP and in industry associations which have the

capacity to play a key role in advancing the development of standards, best practices and constructive policy.

### Shaping our portfolio to sustainably protect and grow value over time

In parallel with taking action to reduce emissions, we must also be thoughtful about the implications of climate change for BHP's operational and portfolio resilience. We must take a proactive and collaborative approach to adaptation by enhancing the climate resilience of our operated assets, investments, portfolio, supply chain, communities and ecosystems, to achieve mutually beneficial outcomes for our business and stakeholders. We regularly test our portfolio against a range of climate change scenarios, as previously outlined in our report: Climate Change: Portfolio Analysis (2015). In this report, we have set out an assessment of a 1.5°C scenario, which is aligned to the goals of the Paris Agreement.

What these scenarios tell us is that BHP's overall portfolio is resilient and that, in fact, many of BHP's commodities would further benefit from an accelerated decarbonisation pathway. We are already a major producer of copper and nickel and are seeking further options in these commodities, which see strengthening demand as the world moves to decarbonise. Potash also sees upside in a decarbonising world.

The iron ore and higher quality metallurgical coals that BHP produces are resilient. The world will need more steel for continued economic growth and to build the infrastructure required by decarbonisation. At the same time, steelmakers will need to reduce their emissions intensity, an effort that will be supported in the coming decades by the iron ore and higher quality metallurgical coals that BHP produces.

As the world moves to decarbonise, oil demand will eventually decline. However, oil remains essential for human mobility and many of the difficult-to-displace industrial processes and products that support daily life today and we expect it will take some time for erosion of demand to outpace natural field decline even under a 1.5°C pathway.

Our scenario analysis provides us with the necessary perspective and understanding of risks to help decide how to shape BHP's portfolio over time. We will act to sustainably protect and grow value in the near, medium and long-term.

### Conclusion

Climate change is an urgent global challenge and BHP has a role to play in overcoming it. We will do so through minimising emissions from our operations and through lending our voice, capability and financial support towards the development of the policies and technologies required to accelerate decarbonisation of the global economy. Our actions will be ambitious, tangible and measurable. They will be foremost focused on contributing to global reduction in emissions.

We will continuously manage our portfolio for value and risk, taking into account the latest science and our scenario analysis. We have reflected the importance of climate change action to our company's future and to the world through a strengthened linkage with executive remuneration.

This report and the actions we are taking are the culmination of extensive consultation, deep reflection and decades of leadership. We are committed to solutions and our actions are supported by costed and practical plans – the progress of which will be subject to ongoing, transparent disclosure.

**Mike Henry**  
Chief Executive Officer

(2) Reference baselines will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.

# Our Position on Climate Change

**Warming of the climate is unequivocal, the human influence is clear and physical impacts are unavoidable.**

## **We believe that:**

- The world must pursue the Paris Agreement goals with increased levels of national and global ambition to limit the impacts of climate change.
- Providing access to affordable and clean energy and other products is essential to meet sustainable development goals.
- Under all current plausible scenarios<sup>(3)</sup>, fossil fuels will continue to be a significant part of the global energy mix for decades.
- Demand for renewable energy technologies is likely to grow at unprecedented rates as the power sector decarbonises, and electrification trends accelerate in coming decades.
- There needs to be an acceleration of global effort to drive energy efficiency; to develop and deploy low emissions and negative emissions technologies; and to adapt to the impacts of climate change.
- Policies to spur rapid action should be implemented in an equitable manner to address competitiveness concerns and achieve lowest cost abatement.

## **We will:**

- Continue to take action to reduce our operational greenhouse gas emissions in line with our public targets.
- Support emissions reductions in our value chain, and the economy-wide transitions necessary to meet the Paris Agreement goals, by working with customers and suppliers to achieve sectoral decarbonisation.
- Partner with others to accelerate the transition to a low carbon future and in the development of low emissions and negative emissions technologies, including natural climate solutions.
- Adapt to the potential physical impacts of climate change by building the resilience of our operated assets and investments and contributing to community and ecosystem resilience.
- Seek to enhance the global response to climate change by engaging with governments, maintaining a commitment to climate change advocacy and continuing to promote market mechanisms to reduce global emissions at least cost.

(3) This reference to scenarios is intended to have its meaning in common usage, and is not a reference to the four specific scenarios considered in our latest portfolio analysis in this Report.

# The materials we provide are central to modern life

We constantly evolve our approach so we can deliver them sustainably into the future



## In FY2020, we produced

						
<b>Iron ore</b>	<b>Metallurgical coal</b>	<b>Nickel</b>	<b>Copper</b>	<b>Natural gas</b>	<b>Crude oil</b>	<b>Energy coal</b>
<b>248</b> million tonnes	<b>41</b> million tonnes	<b>80</b> kilotonnes	<b>1,724</b> kilotonnes	<b>360</b> bcf	<b>49</b> MMboe	<b>23</b> million tonnes

## About this Report

This Report is a special publication designed for a more detailed discussion of our approach to climate change. It outlines our story – our successes, our learnings and our plans for future initiatives.

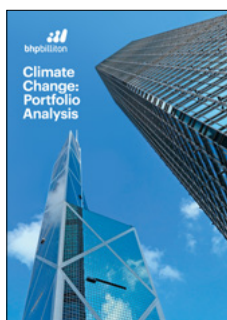
We have previously published two climate-related portfolio analysis reports: *Climate Change: Portfolio Analysis (2015)* and *Climate Change: Portfolio Analysis – Views after Paris (2016)*, which are available online at [bhp.com/climate](http://bhp.com/climate). These reports described how we have used scenario analysis to evaluate the resilience of our portfolio to both an orderly and a more rapid transition to a 2°C world. At the time, these reports set a new standard within the resources sector.

Since these reports were published, the Paris Agreement has entered into force; countries have set their first nationally determined contributions (NDCs); the International Energy Agency has published updates to its World Energy Outlook, including its energy scenarios; and the Intergovernmental Panel on Climate Change (IPCC) has published its report, *Global warming of 1.5°C*<sup>(4)</sup>. The IPCC states that limiting global warming to 2°C may avoid some material climate change impacts, but the consequences will be significantly worse than if global warming can be limited to 1.5°C.

The transition to a 1.5°C world will require tremendous effort, but the IPCC report highlights that the effort can be worth the reward of more secure communities, ecosystems and economies. We have considered these updates in our climate change strategy.

The disclosures in this Report are for FY2020. The focus for this Report is on climate change, energy, greenhouse gas (GHG) emissions and the risks and opportunities linked to the transition to a low carbon future.

This Report aligns with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and we have structured the Report to address the TCFD's themes of Governance, Strategy, Risk Management, and Metrics and Targets. Our Vice President of Sustainability and Climate Change, Dr Fiona Wild, is a member of the Task Force. We believe the TCFD recommendations represent an important step towards establishing a widely accepted framework for climate-related financial risk disclosure.



(4) [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15\\_Full\\_Report\\_High\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf)

## Climate change governance

Climate change is a material governance and strategic issue and is routinely on the Board agenda, including as part of strategy discussions, portfolio reviews and investment decisions, risk management oversight and monitoring, and performance against our commitments. The Sustainability Committee assists the Board in overseeing the Group's climate change performance and governance responsibilities. The Risk and Audit Committee and Sustainability Committee assist the Board with the oversight of climate-related risk management, although the Board retains overall accountability for BHP's risk profile. Below the level of the Board, key management decisions are made by the CEO and management, in accordance with their delegated authority.

**The Board strengthened the link between executive remuneration and delivery of our climate change strategy with performance against operational emissions and value chain measures now representing 10 per cent of the Cash and Deferred Plan (CDP) scorecard, which is significantly higher than in previous years.** The 10 per cent climate change component includes these key measures:

- Reductions in Scope 1 and Scope 2 operational GHG emissions
- Short and medium-term actions to reduce operational GHG emissions on the pathway to net zero emissions
- Short and medium-term actions to address value chain (Scope 3) GHG emissions

## Risk management

Risk management accountability and oversight is an integral part of BHP's governance. The Board, the Sustainability Committee, the Risk and Audit Committee and senior management are regularly provided with insights on trends and aggregate exposure for climate-related risks and performance against risk appetite. The complex and pervasive nature of climate change means that it can act as an amplifier of other risks across BHP's risk profile. For example, greater risk of extreme weather increases both the likelihood and potential impact of risks to the integrity of BHP's assets. Climate-related risk events also have the potential to manifest across environmental, economic or other systems. Climate-related risks can be grouped in two categories: transition risk and physical risk.

Transition risks arise from policy, regulatory, legal, technological, market and other societal responses to the challenges posed by climate change and the transition to a low carbon economy. We consider transition risks as part of strategy discussions, portfolio reviews and investment decisions. Physical risks include acute risks resulting from increased severity of extreme weather events, and chronic risks resulting from longer-term changes in climate patterns. In assessing physical risks, we include consideration of the potential vulnerabilities of our operated assets, investments, portfolio, communities, ecosystems and our suppliers and customers across the value chain.

We recognise the importance of integrating physical climate change risks and adaptation assessment and planning into decision-making processes, for example, we require proposed new investments to assess and manage risks associated with potential physical impacts of climate change. Efforts to mitigate and adapt to climate change can also produce opportunities for BHP, for example through resource efficiency and cost savings, and building resilience along the supply chain to support business continuity.

## Portfolio analysis

In this Report, we describe our latest portfolio analysis, including four scenarios: Central Energy View and Lower Carbon View which we use as inputs to our planning cases; a non-linear, higher temperature Climate Crisis scenario and a 1.5°C Paris-aligned scenario. To stay within a carbon budget that keeps global warming to no more than 1.5°C, the 1.5°C scenario requires steep global annual emissions reductions, sustained for decades. This pathway to 2050 represents a major departure from today's global trajectory. Rapid transitions would be needed across energy, land, industrial, and agricultural systems. Such transitions would require substantial new investments in low emissions and negative emissions technologies, and energy and process efficiency. The IPCC report, *Global warming of 1.5°C*, finds that if the 1.5°C goal is to be met, investments in these technologies would need to increase by roughly a factor of six by 2050 compared to 2015 levels.

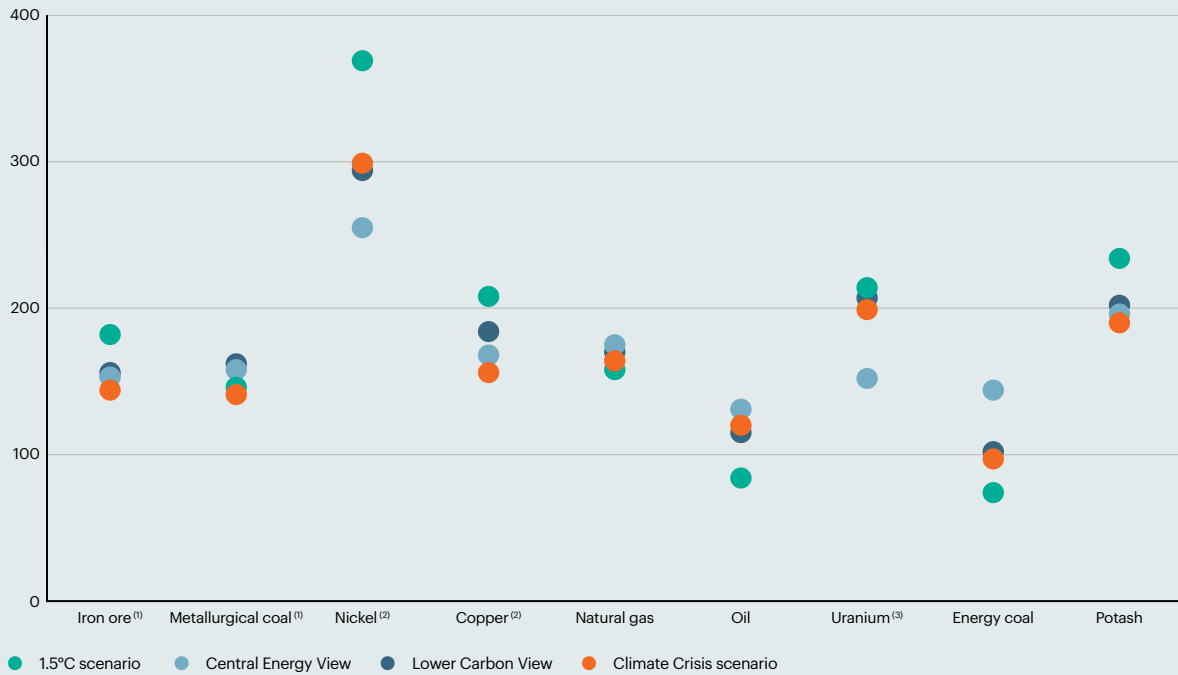
**Our updated portfolio analysis demonstrates that our business can continue to thrive over the next 30 years, as the global community takes action to decarbonise, even under a Paris-aligned 1.5°C trajectory.** As illustrated in the Cumulative Demand Figure, our modelling indicated that cumulative demand for copper, nickel and potash over the next 30 years in the 1.5°C scenario could not only exceed the last 30 years, but also our mid-planning case (Central Energy View). The modelling also showed strong cumulative demand for iron ore, metallurgical coal and natural gas and more modest demand for oil in the transition to a low carbon future over the next 30 years. Opportunities to invest in commodities such as potash, nickel and copper, and our rigorous approach to capital allocation provide a strong foundation for our business as the world takes action to decarbonise, even for a 1.5°C world. In contrast, while the Climate Crisis scenario presents some initial upside, it ultimately results in a lower demand trajectory post-climate shock, as the world settles on a permanently lower GDP growth trajectory and rapidly decarbonises. Cumulatively, demand for most of our commodities is lower in this scenario.

Transitioning the global economy over the next 30 years, on a trajectory consistent with the Paris Agreement goals, would limit potential global climate-related impacts, including physical climate change risks at our assets. This would also potentially generate significant value for our portfolio as shown in the Rolling present value Figure below. The need to adapt also grows as the global average temperature rises, suggesting that transitioning to a 1.5°C world could limit the costs associated with adaptation in many regions, compared to higher temperature trajectories.

The 1.5°C scenario is an attractive scenario for BHP, our shareholders and the global community. However, today's signposts do not indicate that the appropriate measures are in place to drive decarbonisation at the pace nor scale required for the 1.5°C scenario. If we see the necessary changes in our signposts, we will adjust our planning cases accordingly. Given the long lead times for new investments, we will continue to stress test our decision-making with updated strategic themes and scenarios to understand emerging opportunities. We will also continue to advocate for actions in line with the Paris Agreement goals and seek partnerships to leverage our own investments in low emissions and negative emissions technologies and natural climate solutions, because we believe it is the right thing to do for our shareholders and our global community.

Executive summary continued

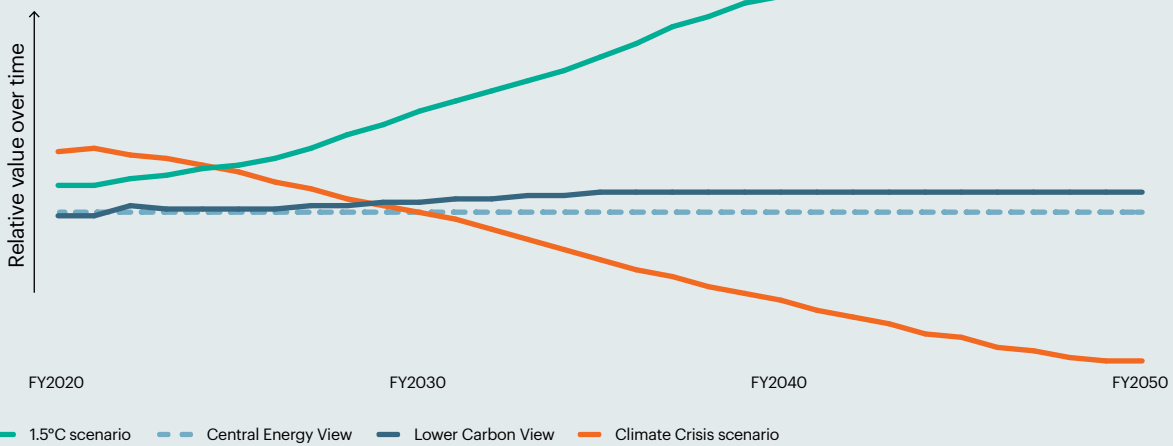
**Cumulative demand in the next 30 years compared to the last 30 years**  
 (100% = CY1990-CY2019 cumulative demand)



Source: BHP, Vivid Economics.

- (1) Iron ore and Metallurgical coal demand accounts for Contestable Market = Global seaborne market plus Chinese domestic demand
- (2) Nickel and Copper demand references primary metal
- (3) Nuclear power was used as a proxy for historic cumulative demand for Uranium

**Rolling present value<sup>(1)</sup> relative to Central Energy View**



(1) Present value of unlevered free cash flows. Data in this chart is based on our current portfolio and does not include any potential future divestments.



## Taking action through our targets, goals and strategies

### Operational GHG emissions reductions

Reducing GHG emissions at our operated assets is a key component of our climate change strategy. Our current short-term target is, by FY2022, to maintain our total operational GHG emissions at or below FY2017 levels<sup>(5)</sup>, while we continue to grow our business. While our annual emissions are currently higher than FY2017 levels, our asset-level emissions forecasts show we are on track to meet our FY2022 target. Our long-term goal is to achieve net-zero operational emissions by 2050.

**We have set a medium-term target to reduce operational GHG emissions (Scope 1 and Scope 2 from our operated assets) by at least 30 per cent from FY2020 levels<sup>(6)</sup> by FY2030.**

Our FY2030 target was informed by our Pathways to Net Zero (P2NZ) emissions project that was established to understand opportunities to achieve and maintain net-zero operational emissions by 2050. The P2NZ project has identified a range of options for decarbonisation of BHP's operated assets. The key areas of focus are renewable electricity, low or zero-carbon material movement (e.g. reducing diesel use in mining equipment), and reducing hard-to-abate emissions, including fugitive methane from coal mining and petroleum production. We will initially focus on decarbonising our electricity supply, which will also facilitate electrification and diesel displacement in our mining operations.

We made strong progress in FY2020 as a result of establishing four new renewable power purchase agreements (PPAs) for our Escondida and Spence copper operations in Chile. The contracts will effectively displace 3 million tonnes (Mt) carbon dioxide equivalent (CO<sub>2</sub>e) per year from FY2022, compared with the fossil fuel based contracts they are replacing. Our new PPAs have triggered the development of new renewable generation capacity. About half of our new contracted supply will be met by existing capacity and the remainder from new capacity which is currently under construction. This new renewable generation will displace thermal generation, leading to a reduction in total emissions in Chile. The new PPAs also offer financial savings compared with existing arrangements.

We established our Carbon Offset strategy that describes how we propose that a quantity of carbon offsets be procured and, from the mid-2020s onwards, retired voluntarily at regular intervals. While we will prioritise emissions reductions within our operated assets to meet our medium-term target, by including offsets as an element of our climate change strategy, we will also continue to support a range of projects that offer sustainability co-benefits, including support for local communities and biodiversity conservation.

### Value chain emissions reductions

At BHP, we recognise the importance of taking action to support efforts to reduce emissions across our full value chain, as the emissions from our customers' use of our products are significantly higher than those from our operated assets. By definition, Scope 3 emissions occur outside of our operated assets and are emissions over which we do not have operational control. We therefore seek opportunities to partner with others across our value chain to enable the reduction of these emissions. The most significant contributions to Scope 3 emissions come from the processing and use of our products, in particular from the use of our iron ore and metallurgical coal in steelmaking.

**We have set Scope 3 GHG emission goals for 2030 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**
- **support 40 per cent emissions intensity reduction of BHP-chartered shipping of our products**

In support of the medium-term goal for the steel industry, we will continue our engagement and technical collaboration with customers in the steel sector to drive the most efficient utilisation of BHP's products, while working with our operated assets to deliver the right product qualities to our customers. We will also partner with leading steel mills and other stakeholders to accelerate the development and commercialisation of technologies that support greater efficiency and emissions reductions in the integrated steelmaking route. We will also work to improve our understanding of alternative steelmaking technologies and how BHP's current and future products can support the adoption of such technologies.

In the maritime sector, BHP is one of the world's largest dry bulk charterers. We therefore have the opportunity to influence action in a global industry where emissions are difficult to abate. We expect to achieve our Scope 3 goal through chartering choices, alternative fuel requirements, and technology to optimise voyages. As an initial action, in July 2019 we issued a world-first tender for lower-emissions, LNG-fuelled bulk carrier vessels for iron ore transportation. This is expected to lead to lower emissions of up to 34 per cent on a per voyage basis when compared to conventional vessels.

### Climate Investment Program

One of our key contributions to driving decarbonisation across our value chain is the Climate Investment Program (CIP), announced in July 2019. BHP will invest at least US\$400 million over the five-year life of the CIP in emissions reduction projects across our operated assets and value chain. It is a demonstration of our commitment to take a product stewardship role in relation to our full value chain. Initial investments will focus on reducing emissions at our Minerals (Australia and Americas) operated assets and addressing Scope 3 emissions in the steelmaking sector, particularly emerging technologies that have the potential to be scaled for widespread application. During FY2020, potential CIP projects have requested approximately US\$350 million over five years. Establishing a robust pipeline is critical to drive prioritisation of the best projects across our operated assets and value chain, and to ensure that our emissions targets can be met alongside safety, production and cost targets.

(5) FY2017 baseline will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.

(6) FY2020 baseline will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.

### Adaptation strategy

Risks related to the potential physical impacts of climate change include acute risks resulting from increased severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns. BHP operates in zones prone to extreme weather events and is exposed to potential disruptions such as failures of mining or processing equipment, loss of containment, mining infrastructure failures (e.g. power, water, rail and port), support infrastructure failures (e.g. technology services and office buildings), disruption to critical supplies (e.g. explosives stock) and adverse impacts to health and safety, including loss of life.

We assess our risk of exposure to potential climate change impacts to be material, including the potential for more frequent and intense weather events, and increasing sea water levels that may result in disruptions (e.g. to port operations). Left unmanaged, physical climate change risks may threaten our sustainable long-term shareholder return objectives.

Our approach to climate change adaptation was established in 2014. In order to strengthen our approach, BHP undertook a series of assessments and engagements in FY2020 and this work has informed the updating of our Adaptation Strategy, which will be finalised in FY2021.

### Advocacy strategy

Climate change is a global challenge that requires collaboration, and industry has a key role to play in supporting policy development. We engage with governments and other stakeholders to contribute to the development of an effective, long-term policy framework that can deliver a low carbon economy. We prioritise working with others to enhance the global policy and market response, and support the development of market mechanisms that reduce global GHG emissions through projects that generate carbon credits.

BHP is a member of industry associations around the world. We believe associations can perform a number of functions that can lead to better outcomes on policy, practice and standards. Over the past five years, there has been increasing stakeholder interest in the role played by industry associations in public policy debates, particularly in the context of climate change policy. We published our first industry association review in 2017, which sought to identify 'material differences' between BHP and our member associations on climate change policy. We repeated this exercise in 2018 and 2019. For the latter, we broadened our methodology to capture additional organisations and to provide an assessment of the extent of overall alignment between BHP and our association memberships on climate change policy. Outcomes from our 2019 review are set out in our 2019 Industry Association Review Report available online at [bhp.com](http://bhp.com).

Following our 2019 review, we commenced a process to understand how we could further enhance our overall approach to industry associations to ensure we maximise the value of our memberships. We have also taken further steps to address investor expectations around climate change advocacy by industry associations by engaging with a broad range of stakeholders from around the world, including investors, civil society groups, community groups and industry associations. As a result of that feedback, we developed and published our Global Climate Policy Standards<sup>(7)</sup>, which are intended to provide greater clarity on how our policy positions on climate change should be reflected in our own advocacy and that of associations to which we belong, and announced key changes to our approach to industry associations, as set out online at [bhp.com](http://bhp.com).

## Looking ahead

### Our commitments provide a pathway for action

This Report is a foundation for action. We have laid out a comprehensive series of metrics, targets and goals. We have committed to holding management to account through a direct linkage of climate-related targets and goals to executive remuneration. And we have affirmed our commitment to advocate for public policy in pursuit of global decarbonisation. We will remain alert to technological, political and societal developments that may indicate changes to our signposts and the development of new uncertainties for our portfolio analysis. We will continue to monitor developments and review our approach as necessary, to respond to evolving approaches to climate change and climate-related disclosures.

### A shared global challenge

We also recognise our role in collaborating with others to achieve progress in managing the challenges of climate change. Without collaboration, the world will not be able to achieve the goals of growth, equity and decarbonisation for the long-term. The challenges inherent in our 1.5°C scenario illustrate the scale of the task ahead. We will seek opportunities to work with partners to commercialise, at scale and acceptable cost, low emissions and negative emissions technologies that are critical for the transition to a 1.5°C world. These technologies include carbon capture, utilisation and storage (CCUS), direct air capture (DAC) and the natural climate solutions of reforestation and afforestation. Consideration of the 1.5°C scenario in our portfolio analysis highlights that the world needs these technologies without delay and at scale. We will continue to seek opportunities to collaborate with value chain partners, investors, researchers and governments to work towards net-zero emissions globally by 2050.

### Building a better world

Ultimately, BHP's business is founded on providing the resources that communities and nations need to build better lives for their citizens today, and to create a brighter future for the decades to come. Building that future around a stable climate would mean that the potential of the resources we produce is maximised, their value should be higher, and the quality of life of hundreds of millions of people around the world would be better.

(7) [https://www.bhp.com/-/media/documents/ourapproach/operatingwithintegrity/industryassociations/200814\\_globalclimatepolicystandards---aug20.pdf?la=en](https://www.bhp.com/-/media/documents/ourapproach/operatingwithintegrity/industryassociations/200814_globalclimatepolicystandards---aug20.pdf?la=en)

# 1 Governance

## 1.1 Role and responsibilities of the Board

Figure 1 illustrates the role of the Board and management in climate change governance in BHP. Climate change is a Board-level governance issue and is discussed regularly, including during Board strategy discussions, portfolio review and investment decisions, and in the context of scenario triggers and signposts.

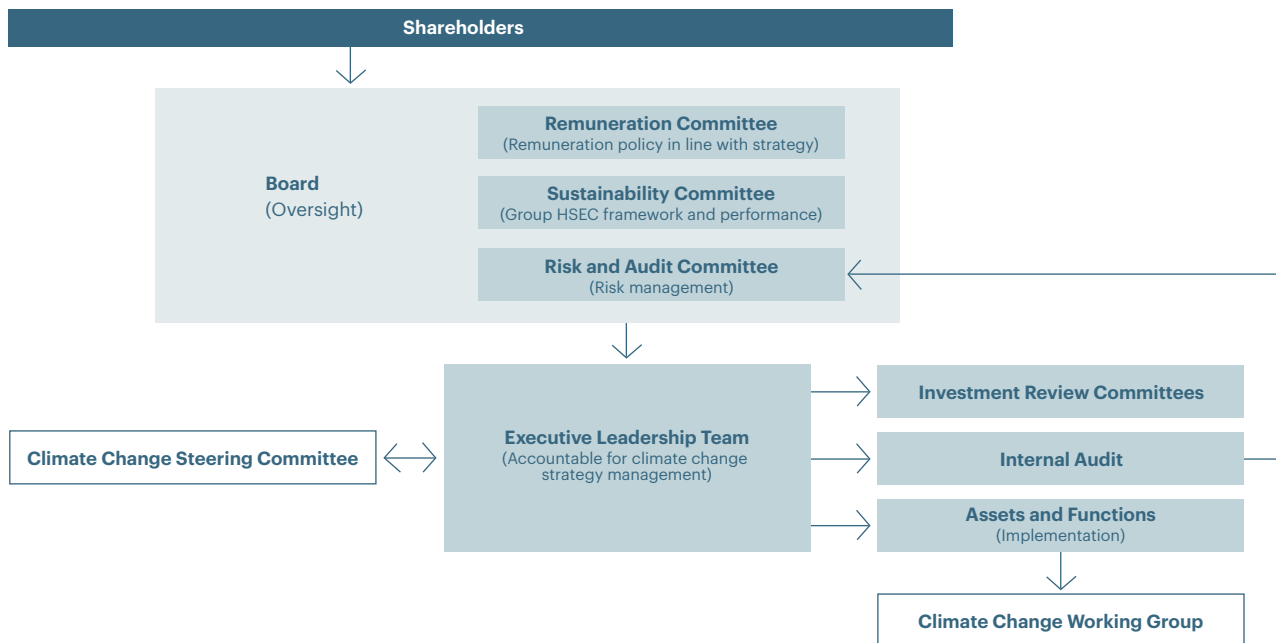
Board members bring experience from a range of sectors including resources, energy, finance, technology and public policy, which equips them to consider potential implications of climate change on BHP and its operational capacity, as well as understand the nature of the debate and the international policy response as it develops. Collectively, the Board has the experience and skills to assist the Group in the optimal allocation of financial, capital and human resources for the creation of long-term shareholder value. It also means the Board understands the importance of meeting the

expectations of stakeholders, including in respect of the natural environment. In addition, there is a deep understanding of systemic risk and the potential impacts on our portfolio.

### Expert advisers

The Board has taken a number of measures to ensure that its decisions are informed by climate change science and by expert advisers. The Board seeks the input of management (including Dr Fiona Wild, our Vice President Sustainability and Climate Change) and independent advisers. In addition, our Forum on Corporate Responsibility (which includes Don Henry, former CEO of the Australian Conservation Foundation and Changhua Wu, former Greater China Director of the Climate Group) advises operational management teams and engages with the Sustainability Committee and the Board as appropriate.

Figure 1. Climate change governance at BHP



### Board discussions

During FY2020, the Board:

- Undertook a deep dive relating to climate change and strategy, including new climate change scenarios. Discussions included the relative commodity attractiveness under a 1.5°C scenario. In addition, stakeholder attitudes, including those of investors, were considered in relation to climate change and the direction and momentum of the evolution of those expectations.
- Held discussions on a range of other climate-related topics including the role of industry associations in climate change advocacy, investor and government views on climate change issues (including in the context of shareholder requisitioned resolutions), reviews of supply and demand analysis and portfolio planning.

Following detailed discussions by the Executive Leadership Team (ELT), the Sustainability Committee and the Board during FY2020, in August 2020 the Board approved our medium-term target, Scope 3 emissions goals and the strengthening of links between executive remuneration and climate-related performance measures, and noted the Carbon Offset strategy.

### Investor engagement

Part of the Board's commitment to high-quality governance is expressed through the approach BHP takes to engaging and communicating with its shareholders on climate change issues. The Board uses a range of formal and informal communication channels to understand and take into account the views of shareholders.

Feedback and commentary related to climate change are increasingly a part of all of BHP's routine investor engagements including results roadshows with the CEO and CFO, and the Chair's investor engagement meetings. A summary of this feedback is provided to the Board, as is feedback received through other investor engagement including through Annual General Meetings.



See section 2.6 Advocacy strategy for additional information.

## Sustainability Committee

The Sustainability Committee assists the Board in overseeing the Group's health, safety, environment and community (HSEC) performance and governance responsibilities, and the adequacy of the Group's HSEC framework, including climate change. Committee members have extensive experience with complex HSEC risks and frameworks, and the broader stakeholder considerations relating to climate change. The Sustainability Committee spends a significant amount of time considering systemic climate change matters relating to the resilience of, and opportunities for, BHP's portfolio.

Following the commitments approved by the Board and announced in July 2019, the Sustainability Committee reviewed a suite of proposed measures to implement those commitments, including steps to reduce our operational emissions and address Scope 3 emissions across the value chain; the deployment of the US\$400 million Climate Investment Program; and how the link between executive remuneration and delivery of our climate strategy could best be achieved along with other HSEC objectives.

The Sustainability Committee considered the work undertaken across our Functions and Asset teams, which reflected a 'whole of company' response, commensurate with the scale and scope of the climate challenge. The actions reviewed were designed to be complementary, mutually reinforcing, commercially sound, achievable and ambitious.

## Risk and Audit Committee

The Risk and Audit Committee (RAC) assists the Board with the oversight of risk management, although the Board retains overall accountability for BHP's risk profile. In addition, the Board requires the CEO to implement a system of controls for identifying and managing risk. The Directors, through the RAC, review the systems that have been established, regularly review the effectiveness of those systems and monitor to ensure that necessary actions have been taken to remedy any significant failings or weaknesses identified from that review. The RAC regularly reports to the Board to enable the Board to review our Risk Framework at least annually, to confirm that the Risk Framework continues to be sound and that BHP is operating with regard to the risk appetite set by the Board.



Further information is set out in section 3 Risk management of this Report and section 1.5.4 of the BHP Annual Report 2020, available on-line at [bhp.com](http://bhp.com).

## Remuneration Committee

The Remuneration Committee supports the Board in relation to the determination of remuneration policy and its application for senior executives, performance evaluation, the adoption of incentive plans, and various governance responsibilities related to remuneration.

The Remuneration Committee announced in the BHP Annual Report 2019 that the Cash and Deferred Plan (CDP) incentive scorecard applicable to the CEO and other senior executives will include a cash award, plus two equal tranches of deferred shares, vesting in two and five years. The CDP provides participants with variable remuneration linked to actual performance over the short, medium and long term.

## Remuneration policy and outcomes

The purpose of BHP's remuneration arrangements is to drive the delivery of strategy, attract and motivate talented executives, and ensure long-term alignment of senior executives with our shareholders' interests.

The Board approved the recommendation from the Remuneration Committee, working in conjunction with the Sustainability Committee, that from 1 July 2020, the 25 per cent HSEC component of the CDP will include increased weighting, specificity and transparency on climate-related metrics. For FY2020, the 25 per cent HSEC component of the CDP scorecard included:

- Fatalities and other HSEC incidents
- HPIF (High Potential Injury Frequency), TRIF (total recordable injury frequency) and OIF (Occupational Illness Frequency)
- HSEC risk management (including climate change)
- HSEC initiatives linked to our five-year (FY2017-FY2022) public targets (including climate change)

For FY2021, the climate change weighting within the CDP scorecard that applies to the CEO, and members of the ELT, will be 10 per cent (i.e. 40 per cent of the 25 per cent HSEC component weighting), which is significantly higher than in previous years. This change delivers on BHP's commitment to clarify and strengthen the links between executive remuneration and climate change, as well as providing greater visibility and transparency to climate change measures and outcomes. The 10 per cent climate change component will include these key measures:

- Reductions in Scope 1 and Scope 2 operational GHG emissions
- Short and medium-term actions to reduce operational GHG emissions on the pathway to net-zero emissions
- Short and medium-term actions to address value chain (Scope 3) GHG emissions

The aligned cascade of measures in the CDP scorecard, from the CEO down through all levels of the organisation, has long been an important feature of BHP's variable pay plans. This change to the HSEC component of the CDP scorecard, with an increase in the weighting, specificity and transparency of climate-related metrics, will directly determine the remuneration outcomes of the CEO and the members of the ELT, and will also be cascaded to other senior leaders and the broader workforce, specifically to individual employees who have direct accountability for the achievement of HSEC outcomes as part of their roles.

## 1.2 Role and responsibilities of management

Below the level of the Board, key management decisions are made by the CEO and management, in accordance with their delegated authority. The ELT are held to account for a range of measures including climate change-related performance. The same measures are cascaded through the organisation.

### Climate-related activities in FY2020

A range of BHP's Functions and Asset teams have been engaged in progressing our new climate change commitments during FY2020, including development of BHP's medium-term target for FY2030, Scope 3 goals and changes to executive remuneration. These were discussed and approved by the ELT, before being presented to the relevant Committees and the Board. In June 2020, members of the ELT and senior management presented at and participated in the Board's deep dive relating to climate change and strategy. ELT members have also been involved in reviewing climate change disclosures for the BHP Annual Report 2020 and this Report.

### Capital Allocation and Investment Review Committees

BHP's Investment Review Committees (IRCs) provide oversight for investment processes across BHP, including the investment review process. The purpose of the IRCs is to support relevant decision-makers in assessing investment decisions using a transparent and rigorous governance process. This is to ensure that investments are aligned with BHP's purpose, strategy and values, as well as with the Group's capital priorities and plans; key threats and opportunities are identified and managed; and shareholder value is optimised, on a risk-informed basis.

The Capital Allocation Framework, outlined in Figure 2, provides an overarching hierarchy for the potential uses of surplus operating cash and is used for short, medium and long-term decision making and planning processes. Capital is prioritised from a portfolio perspective consistent with long-term strategy, to ensure maximum value and returns. Operational decarbonisation projects will be considered as part of the maintenance capital category within this framework along with risk reduction, asset integrity, compliance, transformation initiatives, and major, minor and sustaining projects that preserve value at our operated assets. This will enable consideration of a full risk assessment across qualitative

and quantitative criteria relevant to each capital allocation decision. Individual projects must justify the investment based on abatement efficiency, technology readiness, maturity, operational impact and other relative economics compared with other maintenance capital projects in the portfolio.

Decarbonisation projects, including those that have been prioritised for potential Climate Investment Program funding, are incorporated into our annual corporate planning process, which is critical to creating alignment across BHP. This process guides the development of plans, targets and budgets to help us decide where to deploy our capital and resources. The IRCs provide endorsement for whether to progress these projects based on qualitative and quantitative measures. Execution is monitored through periodic reporting on key performance indicators (KPIs).

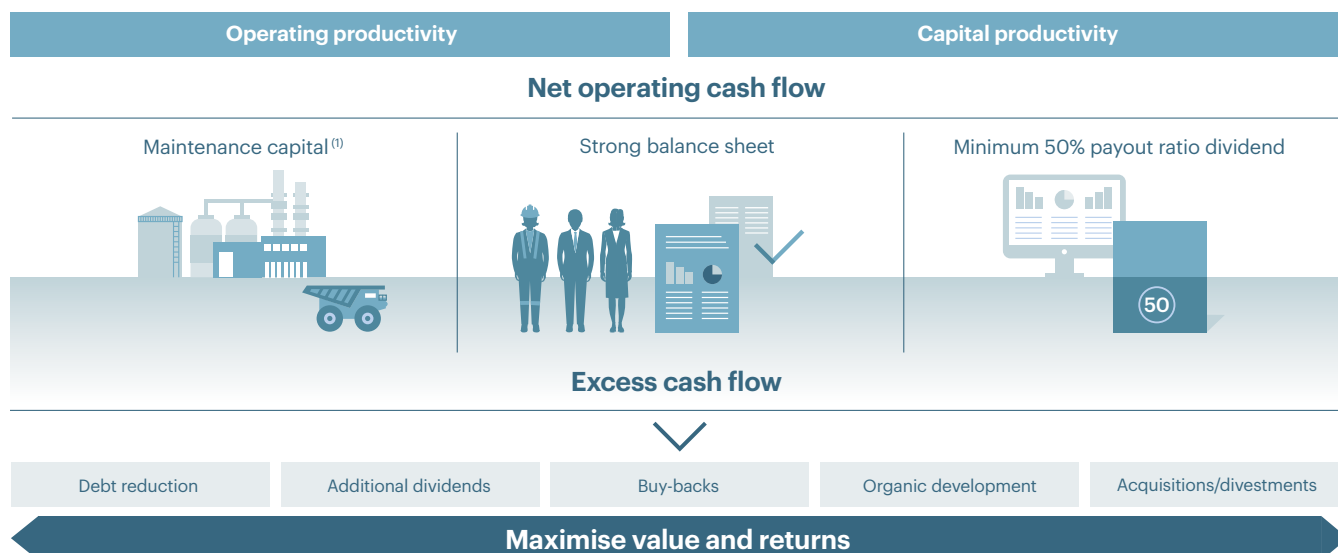
### Operating model

BHP has a dedicated Climate Change Team that sits within our External Affairs function and is responsible for advising the ELT on BHP's response to climate change. The team collaborates with BHP's Functions and Asset teams, external partners and industry to develop practical climate change solutions, designed to preserve and unlock long-term value for BHP. It regularly prepares information and advice for the ELT, Sustainability Committee, Risk and Audit Committee and the Board on climate-related strategy, risks and performance against climate-related metrics. The team also monitors key risk indicators to monitor performance against our appetite for climate change-related risks.

Climate-related activity is also undertaken across the Group, including in our Portfolio Strategy and Development, Commercial, Planning and Technical and Environment teams. These activities are overseen by the Climate Change Steering Committee, which is made up of senior management representing our operated assets and Commercial team, plus Legal, Governance, Finance, Planning and Investor Relations functions. The Steering Committee and Climate Change Team are supported by the Climate Change Working Group, which acts as a coordination point for climate-related activity across BHP's functions.

**Figure 2: Climate change is embedded into our strategic decision making**

**Decarbonisation projects are assessed against alternative uses of free cash through the Capital Allocation Framework**



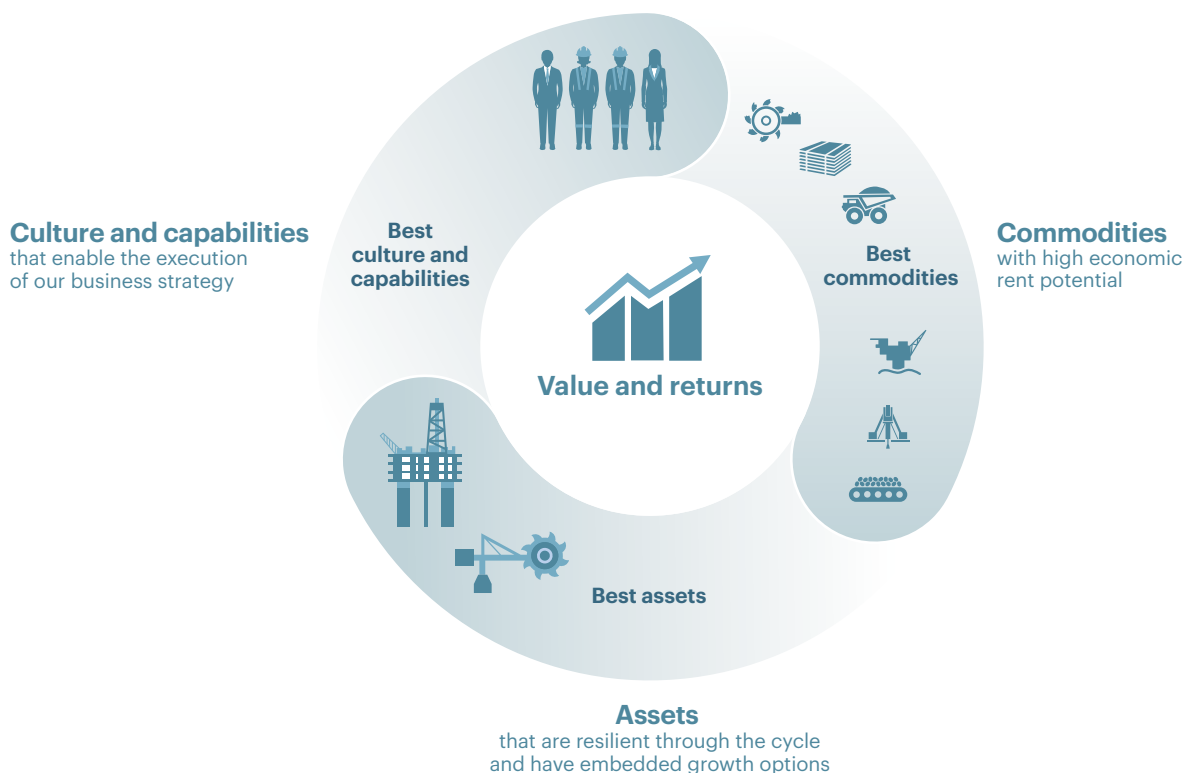
(1) Maintenance capital includes spend on asset integrity, risk reduction, compliance, sustaining capacity/cost, transformation initiatives and climate change.

## 2 Taking action through targets, goals and strategies

Our Purpose is to bring people and resources together to build a better world. Our Strategy, as illustrated in Figure 3, is to have the best culture and capabilities, best commodities and best assets in order to create long-term value and high returns. Transformation, capital discipline and social value, including a focus on climate change and building deep and authentic relationships with local, regional and global stakeholders, enable the successful execution of our strategy. The materials we provide are central to modern life and we constantly evolve our approach so we can continue to deliver them sustainably into the future. Our focus on productivity means we believe that we will do a better job of efficiently producing the resources that the world needs, with a lower emissions footprint than most others can achieve.

**Figure 3. Our strategy to maximise value and returns**

To have industry-leading capabilities applied to a portfolio of world-class assets in the most attractive commodities



Our commodities can play an important part in the transition to a low carbon future. Our iron ore, metallurgical coal, copper and nickel provide the essential building blocks for renewable power generation and electric vehicles. Our potash fertiliser options can promote more efficient and more profitable agriculture and alleviate the increased competition for arable land from reforestation and negative emissions technologies, including bioenergy with carbon capture and storage (BECCS). We also expect gas and energy coal to continue to be required for power generation and industrial applications, and oil for mobility, for decades.

Climate change influences both the fundamentals of our business and societal expectations. Understanding these dynamics is critical to developing a sustainable portfolio positioned to thrive in an evolving external environment.

We use analytical tools focused on bottom-up forecast ranges, divergent hypotheses, and scenarios to consider how policy, regulation, technology, markets and society could impact our portfolio. We also continually monitor a range of data sources to identify climate-related developments that would serve as a call to action for us to reassess our portfolio strategy.

Our Purpose and Our Strategy provide a clear direction for our climate change strategy. We focus on reducing our operational GHG emissions; supporting emissions reductions in our value chain; partnering to accelerate the transition to a low carbon future; promoting product stewardship; identifying signposts for climate-related risk and opportunity through our portfolio analysis; and working with others to enhance the global policy and market response. Implementing this strategy will help support continued demand for BHP's commodities.

## 2.1 Portfolio analysis

We have previously published two climate-related portfolio analysis reports: *Climate Change: Portfolio Analysis (2015)* and *Climate Change: Portfolio Analysis – Views after Paris (2016)*, which are available online at [bhp.com/climate](http://bhp.com/climate).

Since these reports were published, the Paris Agreement has entered into force; countries have set their first nationally determined contributions (NDCs); the International Energy Agency has published updates to its World Energy Outlook, including its energy scenarios; and the Intergovernmental Panel on Climate Change (IPCC) has published its report, *Global warming of 1.5°C*<sup>(8)</sup>. The IPCC states that limiting global warming to 2°C may avoid some material climate change impacts, but the consequences will be significantly worse than if global warming can be limited to 1.5°C. The transition to a 1.5°C world will require tremendous effort, but the IPCC report highlights that the effort can be worth the reward of more secure communities, ecosystems and economies.

Our stakeholders have sought to understand how these developments might impact our strategy and portfolio resilience. In July 2019, we committed to update our climate-related portfolio analysis in 2020 to evaluate the potential impacts of a broader range of scenarios, including a transition to 'well below' 2°C. In this Report, we describe core elements of our latest portfolio analysis, including a 1.5°C Paris-aligned scenario, a non-linear, higher temperature Climate Crisis scenario, a Central Energy View and a Lower Carbon View.

### Scenario analysis approach

BHP develops planning cases to inform our strategic choices and the timing of their execution, and to underpin our rigorous annual corporate planning process. These planning cases consist of plausible commodity-specific forecast ranges (high, mid and low cases) that are developed through in-depth, rigorous bottom-up analysis. To understand the range of plausible outcomes for each commodity, we first develop long-term views on the common assumptions on issues that influence all of our markets, such as population, carbon pricing, and economic and financial variables (e.g. GDP, exchange rates, inflation). Each independent set of common assumptions is developed in line with an overarching description of the international policy environment.

These common assumptions are complemented by long term views on key sectors, developed through scenario analysis, that consider competition between substitutable commodities, services or technologies, and analyses these trade-offs in an integrated way. The most important of these are Primary Energy and Transport, both of which have many competing routes to deliver basic services (e.g. providing heat to homes or getting commuters to work). Once these dynamics have been fully considered, we derive our final planning ranges for demand, supply and price for our commodities.

The further we project into the future, the wider the range of uncertainty we face. By expanding the set of scenarios we consider, we are able to examine divergent pathways for the biggest and most durable trends, determine the balance of risks that these external trends pose to the resilience of our portfolio and investment decisions, and identify how well placed we are to act on opportunities they may present. We also identify the signals required to monitor the direction and pace of the progress of these trends.

There are inherent limitations with scenario analysis and it is difficult to predict which, if any, of the scenarios might eventuate. Scenarios do not constitute definitive outcomes for us. Scenario analysis relies on assumptions that may or may not be, or prove to be, correct and may or may not eventuate, and scenarios may be impacted by additional factors to the assumptions disclosed.

### How we think about and use carbon pricing

Regional carbon taxes, levies or allowances, or emissions trading schemes (ETS), are becoming increasingly important mechanisms to drive decarbonisation. We forecast carbon prices to reach between US\$10-40/tCO<sub>2</sub>e in 2030 in the Central Energy View and US\$25-110/tCO<sub>2</sub>e in 2030 in the Lower Carbon View<sup>(9)</sup>. To derive these prices, we segment relevant countries into three tiers depending on their observed and projected level of decarbonisation ambition. We would expect a single global carbon price to hasten decarbonisation across sectors, however, signposts indicate that regional differences are likely to persist at least until 2030. Where we have no internal view on a country, we adopt the International Energy Agency's (IEA) Stated Policy Scenario long run carbon price position.

We include our carbon price forecasts in scenario modelling to determine the competitiveness of fuels across sectors. Our forecasts are also taken into account in investment decisions and asset valuations. We are also developing a quantitative investment metric that proposes to weigh our operational emissions medium-term target and long-term goal against an offset price forecast and an internal abatement project cost curve. This would differ from our carbon price forecasts and inform the implied costs and benefits of our decarbonisation initiatives, allowing us to prioritise and rank those initiatives based on an implied price on carbon.

(8) [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15\\_Full\\_Report\\_High\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf)

(9) Carbon pricing is typically set in local currencies and therefore pricing is subject to movements in foreign exchange rates and inflation. We revise our forecasts periodically in line with CPI and FX forecast updates.

## Scenario analysis update

Given the rapid pace of external change, we have conducted portfolio analysis based on four energy system scenarios, to examine the impact of different economic, policy and societal changes:

- **Central Energy View** reflects existing policy trends and commitments, and tracks to approximately 3°C temperature increase above pre-industrial levels by 2100
- **Lower Carbon View** tracks to approximately 2.5°C temperature increase by 2100 and accelerates decarbonisation trends and policies, particularly in easier-to-abate sectors such as power generation and light duty vehicles
- **Climate Crisis scenario** has strong growth with limited climate action for a decade and a half, followed by a climate crisis which precipitates an extremely steep decarbonisation trajectory, societal turmoil and low GDP growth
- **1.5°C scenario**, which aligns with the goals of the Paris Agreement and requires steep global annual emissions reductions, sustained for decades to stay within a 1.5°C carbon budget

These scenarios were developed prior to the impacts of the COVID-19 pandemic, and therefore any possible effects of the pandemic were not considered in the modelling, although it has been accounted for in our short-run forecasts and considered in our strategic decision-making.

### Central Energy View (~3°C) 2020 – 2050

*Reflects our views on the most likely pathway for policy, technology, and consumer choice*

The Central Energy View is driven by the current and announced policy environment, and overlaid by current and prospective technological options available to decarbonise.

Under this view, total primary energy demand (TPED) grows slightly faster than population, while the energy intensity of GDP declines steadily. The demands of a growing, wealthier population, with an additional 2.5 billion people flowing into urban areas, are only partially offset by efficiency gains. As a result, TPED is ~30 per cent higher in 2050 than today. Cumulative TPED over the next 30 years is 60 per cent higher than in the last 30 years.

**Power:** grows at roughly twice the rate of the aggregate TPED, as more processes are electrified and more people gain access to electricity in the developing world. Large-scale cost reductions in wind and solar generation lead to a much larger share for both on a global level by 2050, with energy coal reducing substantially in the OECD power mix. Energy coal maintains its dominance in the power mix for large developing countries for at least two decades, due to the current low average plant age and affordability concerns. When these plants retire in the late 2030s and early 2040s, the drop-off for energy coal is material. Natural gas plays an important role for baseload generation where supply is cheap, and for supporting renewables integration where it is more costly.

**Transport:** The twin levers of efficiency gains and electrification of transport lead to a plateau in oil demand in the medium term, with demand eventually turning negative.

**Industry:** coal and oil are resilient in industry, although we do anticipate a switch to gas where feasible. Unlike in the power sector, industry will find it much more difficult to shift away from fossil fuels, particularly metallurgical coal (in steel), energy coal (in cement), and oil (in petrochemicals).

### Assumptions and outputs:

<b>Population in 2050</b>	Based on UN forecast 9.8 billion
<b>TPED</b>	TPED grows at ~1% CAGR to 2050;
<b>Energy intensity of GDP</b>	~50% improvement in energy intensity
<b>Rate of energy-related emissions reductions</b>	+0.3% CAGR to 2050
<b>Carbon prices (US\$/tCO<sub>2</sub>e)</b>	Regional carbon prices range from ~\$10-40/t in 2030
<b>Fossil fuel share of primary energy by 2050</b>	~70%
<b>Peak year for coal (energy and metallurgical) and oil demand</b>	Coal peaks in the late 2030s; oil (liquids) peaks in the mid-2030s
<b>Uptake of EVs in light duty vehicle segment</b>	75% of sales in 2050

Implications of the Central Energy View scenario for BHP's commodities:

- Copper and nickel benefit from electrification, though at a slower pace, equivalent to our mid planning case.
- Oil (liquids) demand slowly increases over the next decade, hitting a plateau in the early 2030s.
- Natural gas demand grows fastest among the energy commodities and does not reach a peak pre-2050, though we still do not expect it to play a major role in baseload-power outside of regions with a cheap resource.
- Coal's losses in the OECD power mix are partially offset by its affordability advantage in lower ambition climate regions, and by on-going needs from harder-to-abate processes like steel and cement.



## Lower Carbon View (~2½°C) 2020 – 2050

Reflects faster and deeper decarbonisation trends and policies, particularly in easier to abate sectors

The Lower Carbon View is based on equivalent energy services to the Central Energy View, but assumes more efficient primary energy input and GHG emissions output based on aggressive policies and more rapid technological diffusion. In particular, renewables, EVs, and energy efficiency are pushed to the plausible boundary. Overall trends are dictated by lowest-cost energy solutions, subject to the prevailing policy environment, rather than large-scale shifts in societal preferences.

**Power:** Wind and solar grow to make up over half of electricity generation by 2050. To accommodate this, we assume the technical challenges of integrating very large amounts of variable renewable generation into grids are overcome. Gas loses market share in the power sector to renewables with battery storage. Nuclear plays an important role for longer than in the Central Energy View, with plant lifetimes extended in advanced economies. Energy coal is a casualty of downgrading the importance of affordability: it has already peaked in this scenario.

**Transport:** Additional policies banning internal combustion engines (ICEs) in many regions and charging infrastructure roll outs enable an even faster EV ramp-up than in the Central Energy View. By 2050, 100 per cent sales penetration for light vehicles and the majority of buses sold globally.

**Industry:** We assume some decarbonisation inroads are made in harder-to-abate sectors, with most gains manifesting in the industrial sector's switch from coal and oil to natural gas. Large cost and infrastructure challenges to full decarbonisation remain. Carbon capture, utilisation and storage (CCUS) still does not penetrate in a major way.

### Assumptions and outputs:

<b>Population in 2050</b>	Based on UN forecast 9.8 billion
<b>TPED</b>	TPED grows at -0.5% CAGR to 2050;
<b>Energy intensity of GDP</b>	-60% improvement in energy intensity
<b>Rate of energy-related emissions reductions</b>	-0.6% CAGR to 2050
<b>Carbon prices (US\$/tCO<sub>2</sub>e)</b>	Regional carbon prices range from -\$25-110/t in 2030
<b>Fossil fuel share of primary energy by 2050</b>	~60%
<b>Peak year for coal (energy and metallurgical) and oil demand</b>	Coal already peaked; oil (liquids) peaks in mid to late 2020s
<b>Uptake of EVs in light duty vehicle segment</b>	100% of sales in 2050

Implications of the Lower Carbon View scenario for BHP's commodities:

- Copper and nickel are advantaged by the acceleration in electrification of end use sectors.
- Oil (liquids) demand peaks in the mid to late 2020s, though the decline rate in supply requires the market to continue to induce new production.
- Natural gas demand declines post-2040 due to loss of market share in power to renewables paired with battery storage.
- Uranium demand peaks in the mid-2030s as plant lifetimes are extended.

## Climate Crisis scenario 2020 – 2050

Climate shock leads to environmental and societal turmoil

Climate Crisis is a non-linear scenario that describes a period of strong growth without climate action for a decade and a half, followed by a period of societal turmoil once a climate crisis hits. The shock leads to a massive economic contraction. This provokes a dramatic reorientation of the global energy system, and forceful global collective action to attempt to achieve incredible levels of decarbonisation in the remainder of the period. As a result, emissions reduce on a steep trajectory in the latter period to 2050.

**Pre-shock:** The initial period sees high economic growth and a complacent approach to addressing climate change, with emissions rising steadily. The growth in TPED in this period is consistent with our high planning case for living standards, but those energy services are delivered with relatively less progress made on decarbonisation. Energy coal and natural gas continue to provide an important power generation source, accounting for approximately 40 per cent of generating capacity by the end of pre-shock period. Wind and solar growth are slower to take off but in regions where clean energy technology costs are already less expensive, wind and solar are developed. Oil demand in transport increases as electrification of transport is delayed.

**Climate shock:** A series of assumed physical climate change effects cluster around 2035 and a recession is assumed to be the result. The macroeconomic contraction endures for several years before the global economy eventually stabilises at a much lower level than in the initial high growth period. The turning point delivers a mandate to governments around the world to enact wide-sweeping climate policies.

**Post-shock:** Policymakers accelerate clean energy penetration and decarbonisation solutions at an unprecedented rate in a bid to slow the physical climate change effects. Wind and solar's share in the power mix grows from one fifth to almost half by the end of the scenario. Pro-EV policies phase out internal combustion engine vehicles, and by 2050, light duty vehicles are virtually decarbonised. Heavy industry still finds it difficult to shift away from fossil fuels, but retrofits and new build CCUS facilities ensure emissions are captured. The carbon price is assumed to increase to a global average of greater than US\$160/t to support the large-scale transitions.

**Limitations:** The Climate Crisis scenario does not consider the compound impacts of the events or physical climate change effects described on commodity markets or the potential secondary social, economic and political impacts, which could amplify the impact.

### Assumptions and outputs:

<b>Population in 2050</b>	Based on UN forecast 9.8 billion	
<b>TPED growth</b>	Pre-crisis: +1.7% CAGR	Post-crisis: -1.7% CAGR
<b>Energy intensity of GDP</b>	~50% improvement in energy intensity by 2050	
<b>Rate of energy-related emissions growth</b>	Pre-crisis: +1.2% CAGR	Post-crisis: -4.1% CAGR
<b>Carbon prices (US\$/tCO<sub>2</sub>e)</b>	Pre-crisis: <\$10/t	Post-crisis: \$160/t by 2050
<b>Fossil fuel share of primary energy demand</b>	Pre-crisis: 76%	Post-crisis: 56%
<b>Peak year for coal (energy and metallurgical) and oil demand</b>	Coal and oil (liquids) peak around 2035, pre-climate crisis	
<b>Uptake of EVs in light duty vehicle segment</b>	Pre-crisis: ~10% of sales	Post-crisis: 100% by late 2030s

Implications of the Climate Crisis scenario for BHP's commodities:

- In the pre-shock period, the Climate Crisis scenario is characterised by high economic growth which advantages almost all of our commodities through demand growth, although copper and nickel are deprived of their decarbonisation green-growth opportunities.
- In the post-shock period, the assumed low economic growth induced by the climate crisis has a significant adverse effect on all commodities. While copper and nickel benefit from the extraordinarily rapid rates of electrification in the transport and power sectors, primary demand for these commodities would be partially offset by the likely significant increases in recycling. Energy coal, oil, gas and steelmaking raw materials would be affected by permanently lower demand, as a result of the lower absolute GDP post the shock. Within the energy commodities, demand is also disrupted by substitution to cleaner forms of energy.
- Supply disruptions from assumed physical climate change effects across this scenario could place additional upward pressure on costs and cause significant market volatility.

## 1.5°C scenario

Unprecedented sectoral and regional transitions to reduce emissions

In FY2020, we consulted with Vivid Economics<sup>(10)</sup> to conduct an assessment of commodity demand in a 1.5°C scenario. This work delivers on our commitment to evaluate the potential impacts of a transition to ‘well below’ 2°C on our portfolio and strategy. Limiting the average global temperature increase to 1.5°C above pre-industrial levels is a key global aspiration, however there is limited information in the public domain on the impacts of a 1.5°C scenario on the energy and resource sectors. This work with Vivid Economics is described below.

### Assumptions and outputs:

<b>Population in 2050</b>	Population based on SSP2 <sup>(11)</sup>
<b>TPED</b>	TPED shrinks at -0.2% CAGR to 2050
<b>Energy intensity of GDP</b>	-97% improvement in energy intensity
<b>Rate of energy-related emissions reductions</b>	-3.8% CAGR to 2050
<b>Carbon prices (US\$/tCO<sub>2</sub>e)</b>	Effective global carbon price of \$160/t in 2030 and \$280 in 2050
<b>Fossil fuel share of primary energy by 2050</b>	-50%
<b>Peak year for coal (energy and metallurgical) and oil demand</b>	Coal and oil already peaked
<b>Uptake of EVs in light duty vehicle segment</b>	100% of sales in 2040

To stay within a carbon budget that keeps global warming to no more than 1.5°C, the scenario requires steep global annual emissions reductions, sustained for decades. As shown in Figure 4, the pathway would require every sector of the economy to decarbonise, in addition to massive negative emissions contributions, particularly from forestry. Global energy system emissions would decrease by 70 per cent by 2050 (compared to the roughly 60 per cent increase from 1990-2019) and the fossil fuel share in primary energy would decline to about half by 2050.

This scenario represents a major departure from today's global trajectory. The model therefore assumes urgent action with major global shifts in the 2020s and 2030s. By 2050, the energy system would need to have undergone unprecedented sectoral and regional transitions to reduce emissions sufficiently to meet the 1.5°C target.

**Power:** By 2050, power generation is essentially decarbonised through a large-scale shift to renewables, supplemented by nuclear and a ramp-up of gas generation with CCUS. Compounding the challenge, demand for electricity grows by 80 per cent as the transport and buildings sectors rapidly electrify. The simultaneous increase in demand, and the need to transform power generation infrastructure, results in 13,000 GW of additional renewable capacity needing to be built before 2050 – almost twice today's total global generation capacity. Solar, wind, hydropower and nuclear provide almost 80 per cent of generation in 2050.

**Transport:** The passenger transport and bus sectors are almost entirely electrified by 2040, in addition to electrification of more than half of heavy-duty transport. This electrification results in a massive scale-up of demand for batteries.

By 2050, oil demand halves, with the remaining demand coming from aviation and marine transportation, as well as from industry.

**Industry:** In the period to 2050, the industrial sector decarbonises through fuel switching to gas, electrification, and CCUS. Iron and steel production is increasingly scrap-based and gradually shifts some production towards the direct reduced iron (DRI) route, though the blast furnace route still accounts for over half of production in 2050.

Hydrogen fails to launch at scale before 2050, and the small amounts that do eventuate are produced from natural gas with CCUS. Otherwise, hydrogen struggles to compete with biomass and the direct application of CCUS. This is despite assumptions of aggressive electrolyser cost reductions, based on technologies in development today. The demand for oil as a feedstock for the chemicals industry continues to grow.

**Carbon capture, usage and storage:** CCUS must ramp-up rapidly over the next 30 years to meet the 1.5°C trajectory. CCUS is particularly critical in the industrial sector where electrification can only reach so far. Despite the rapid decarbonisation of the power sector, there is still a need for negative emissions technologies in order to meet the carbon budget. Some of this is generated through forestry, but by 2050, over a billion tonnes of carbon dioxide is taken from the atmosphere through BECCS, as shown in Figure 5. In total, over 5Gt CO<sub>2</sub>e per year is stored by 2050, compared with about 40Mtpa today. Although the model limits CCUS in some sectors to reflect the barriers to adoption of this technology at large scale and affordable cost, this scenario still requires about 10,000 facilities using CCUS by 2050.

**Agriculture:** The 1.5°C scenario assumes that agricultural technologies, including selective breeding, genetic modification and improved irrigation, increase agricultural productivity rapidly, which leads to more land being available for forest cover and production of biofuels.

However, the growth of biofuels for BECCS, and the reforestation and afforestation required as negative emissions technologies, would necessitate access to significant land mass globally by 2050, equivalent to about three-quarters of the land area of Australia.

(10) Vivid Economics is a strategic economic consultancy based in London. Their primary focus is in agriculture, forestry and land use, energy, industry, manufacturing and mining, oil and gas, transport and logistics, and water.

(11) We used an Integrated Assessment Model to develop the 1.5°C scenario which integrates with SSP2, a ‘Middle of the Road’ Shared Socio-economic Pathways scenario for projected socioeconomic global changes up to 2100. See [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15\\_Chapter2\\_Low\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter2_Low_Res.pdf).

Population growth drives up overall demand for food, but to stay within the carbon budget, and to meet the additional demands of the energy system, this scenario envisions 25 per cent of ruminant meat consumption switching to other proteins by 2050.

**Limitations:** Limitations of the 1.5°C scenario analysis include a lack of regional disaggregation; optimisation of the energy mix based on expected costs of different technologies, which reduces the reliability of outlooks for less mature technologies; no account for the potential for localised policies to help accelerate technology learning curves or adoption rates; and the impact of changing prices of resources on technology competitiveness is not factored in.

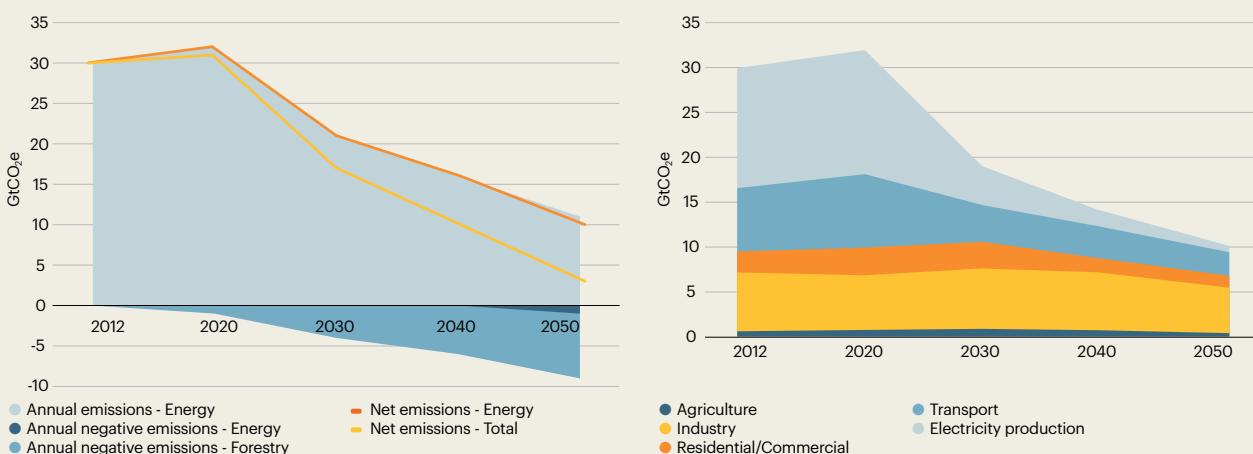
Implications of the 1.5°C scenario for BHP’s commodities:

- The dramatic pace of electrification in this scenario significantly amplifies the advantages of copper and nickel demand versus planning cases.
- Construction of renewables, particularly wind power, benefits steel demand, supporting growth in iron ore. Share of steel produced via the blast furnace route is in line with our planning cases.
- Potash benefits modestly, with upside risk arising from the potential for greater penetration of biofuels.
- Energy coal demand is reduced to nil and the nuclear industry benefits, while oil faces strong headwinds.

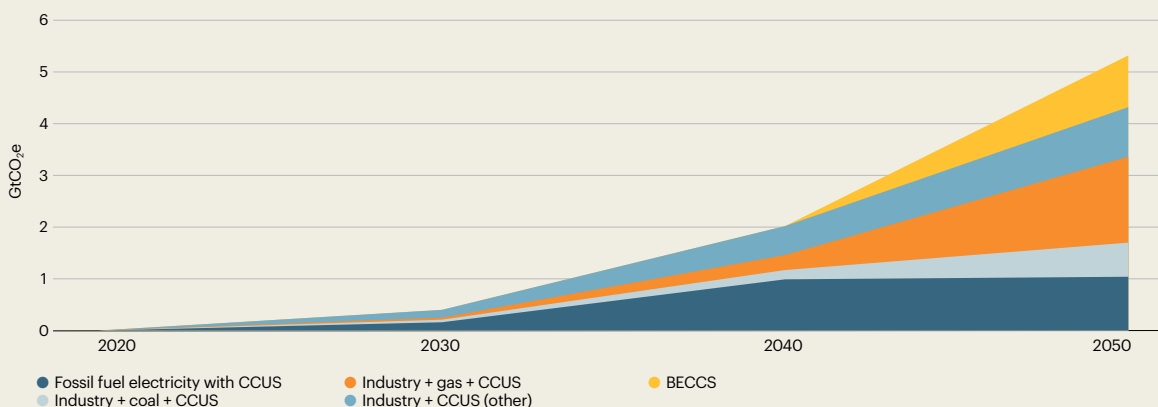
- Gas demand is resilient, though it would need to be paired with CCUS. Hydrogen is not developed at scale, though this conclusion could change with policy support, improved economics or if alternatives do not develop at the rate expected.
- The resources sector would be required to accelerate decarbonisation ambitions.

Although there have been examples of rapid change in specific technologies or sectors in the past, there is no precedent for the rate of change at the scale required for this 1.5°C scenario. Rapid transitions would be needed across energy, land, industrial, and agricultural systems. Such transitions would require substantial new investments in low emissions and negative emissions technologies and energy and process efficiency. To enable this transformation, the carbon price in this scenario increases to ~US\$160/t by 2030 and ~\$280/t by 2050. The rising carbon price is particularly important to incentivise sufficient CCUS capacity to meet the carbon budget. The IPCC report, *Global warming of 1.5°C*<sup>(12)</sup> finds that if the 1.5°C goal is to be met, investments in these technologies would need to increase by roughly a factor of six by 2050 compared to 2015 levels. This scenario also incorporates traits of a circular economy in the resource value chains, to levels which are significantly beyond current practice.

**Figure 4: 1.5°C Scenario: Total (energy and forestry) and Sectoral GHG Emissions to 2050**



**Figure 5: CCUS + BECCS in 1.5°C Scenario**



(12) [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15\\_Full\\_Report\\_High\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf)

## Portfolio assessment

The range of plausible outcomes for each commodity is developed through detailed assessments of supply fundamentals, market balance and size, and value chain dynamics and resilience. These assessments are the basis for determining whether we view a commodity as attractive. BHP uses the Central Energy View and Lower Carbon View as inputs to our planning cases.

The Climate Crisis scenario is not an attractive scenario for BHP, nor our shareholders or the global community. The loss of decarbonisation green-growth opportunities in the first period would negatively impact growth options in copper and nickel, and the impact of the climate crisis on GDP growth would result in steelmaking raw materials being jolted onto permanently lower demand paths. Energy coal and oil would be doubly impacted post the climate crisis through lower GDP growth and steep decarbonisation. In addition, BHP would be addressing potential physical climate impacts on operated assets, managing the resulting increase in costs and facing risks to the integrity of BHP's assets.

Our analysis of this Climate Crisis scenario underscores our commitment to advocate for public policy solutions and our broader advocacy strategy as described later in this Report in section 2.6 Advocacy strategy.

In contrast, the 1.5°C scenario is an attractive scenario for BHP, our shareholders and the global community. The 1.5°C scenario challenges demand profiles for the traditional energy industry but heightens the swing to electrification and the growth of renewable energy, creating additional opportunities to grow in

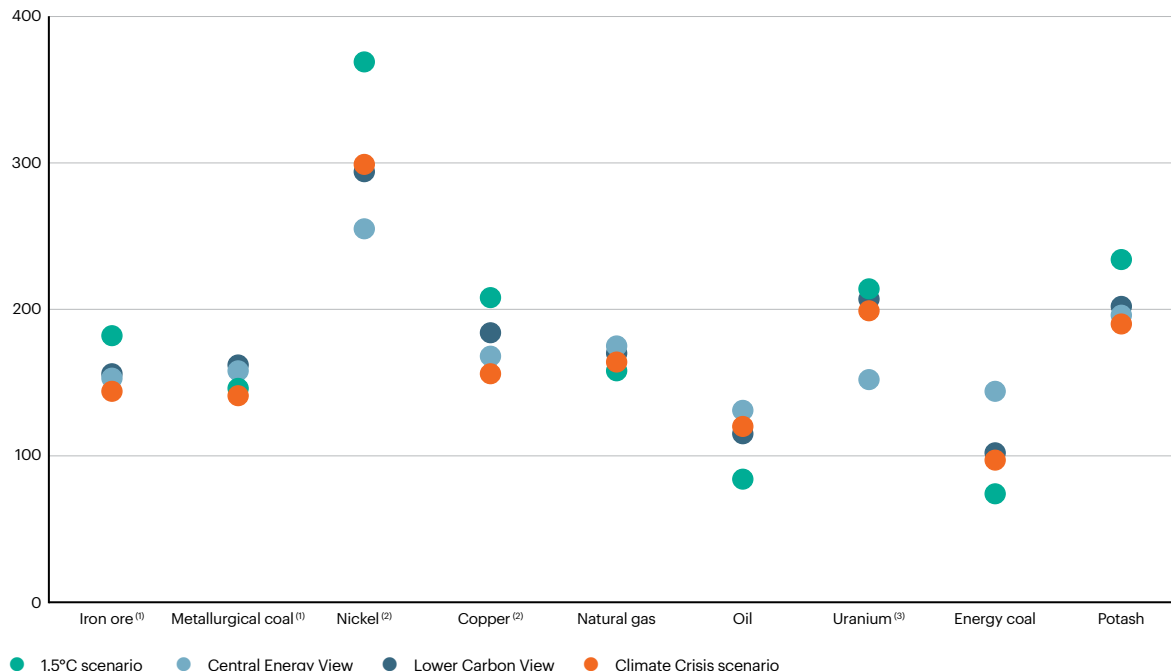
copper and nickel. However, today's signposts do not indicate that the appropriate measures are in place to drive decarbonisation at the pace nor scale required for the 1.5°C scenario. If we see the necessary changes in our signposts, we will adjust our planning cases accordingly. Given the long lead times for new investments, we will continue to stress test our decision-making with updated strategic themes and scenarios to better understand emerging opportunities.

Our latest portfolio analysis leads to our view that demand for our commodities is likely to be higher in the next 30 years than in the past 30 years, as shown in Figure 6, except for energy coal and oil in the 1.5°C scenario and energy coal in the Climate Crisis scenario. In Figure 6, the baseline of 100 per cent represents the cumulative demand over the period CY1990-2019. The dots represent the cumulative demand for each commodity over the next 30 years, based on the respective scenarios.

As shown in Figure 6, cumulative demand for copper, nickel and potash over the next 30 years show the greatest potential increase over the last 30 years. For copper and nickel this is due to the faster uptake of renewable energy technologies and higher rates of electrification. With EVs requiring four times as much copper as ICEs and demand for lithium ion batteries surging, copper and nickel are well-advantaged<sup>(13)</sup>. We assume strong penetration of the scrap-based steel production route over the next 30 years, effectively capping iron ore and metallurgical coal production.

**Figure 6. Cumulative demand in the next 30 years compared to the last 30 years**

(100% = CY1990-CY2019 cumulative demand)



Source: BHP, Vivid Economics.

(1) Iron ore and Metallurgical coal demand accounts for Contestable Market = Global seaborne market plus Chinese domestic demand

(2) Nickel and Copper demand references primary metal

(3) Nuclear power was used as a proxy for historic cumulative demand for Uranium

(13) Note that in our copper pricing protocols, we range EV copper intensity across the low, mid and high cases to capture uncertainty on the composition of the future vehicle fleet in terms of size/weight. We assume 60kgs in the low, 80kgs in the mid and 100kgs in the high.

## Portfolio assessment continued

The outlook for natural gas is strong over the next 30 years, in comparison with the last 30 years. The cumulative demand outlook for gas in the 1.5°C scenario and the Climate Crisis scenario is at the lower end of the range due to the early retirement of gas-fired generation, although gas demand could be buoyed by opportunities to replace coal and oil in hard-to-abate sectors in these scenarios. The adoption of CCUS in the 1.5°C scenario also supports continued operation of gas-fired generation through to 2050.

The outlook for oil is stronger in the Central Energy View, Lower Carbon View and Climate Crisis scenario than historical trends, but less favourable in the 1.5°C scenario, primarily due to the early, fast uptake of EVs and decarbonisation of non-road transport in this scenario. Nevertheless, new upstream oil supply would still need to be induced to meet long-term oil demand. The critical uncertainties for each commodity as the world decarbonises are captured in Figure 7.

Our updated portfolio analysis demonstrates that our business can continue to thrive over the next 30 years, as the global community takes action to decarbonise, even under a Paris-aligned 1.5°C trajectory. If such action is taken, opportunities to invest in commodities such as potash, nickel and copper and our rigorous approach to capital allocation would provide a strong foundation for our business.

Figure 8 shows rolling present value of unlevered free cash flows in the 1.5°C scenario, Lower Carbon View and Climate Crisis scenario, relative to our Central Energy View, over the next 30 years. Our portfolio analysis indicates that the scenarios with greater decarbonisation, 1.5°C scenario and Lower Carbon View, may present greater upside to our current portfolio and create additional opportunities for growth in future-facing commodities. However, as noted above, the challenge of transitioning to a 1.5°C world is profound and would require an unprecedented level of global collaboration and shared commitment across all sectors of society.

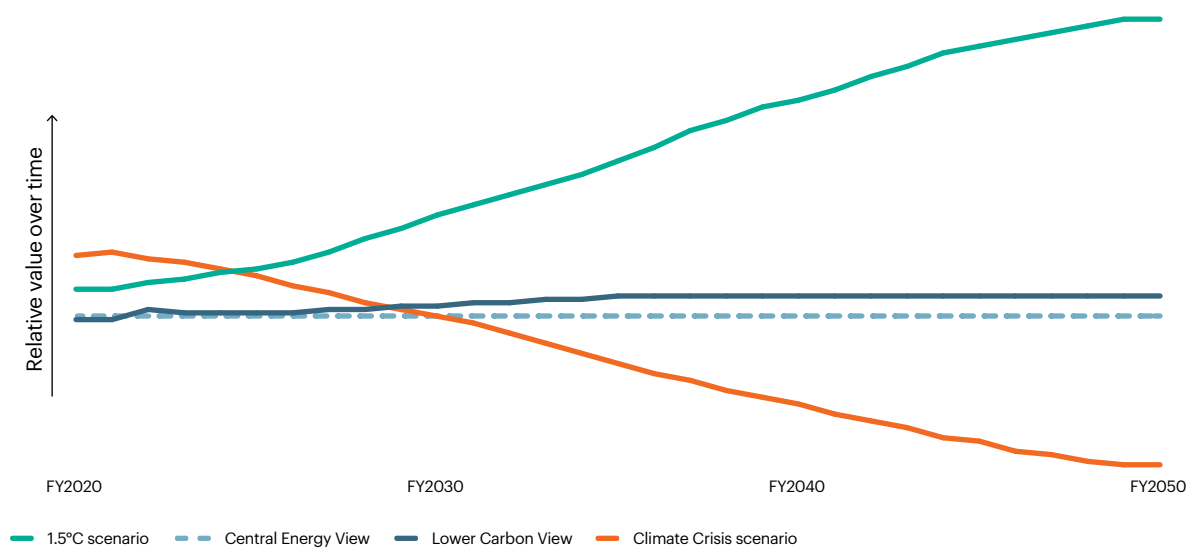
Transitioning the global economy over the next 30 years, on a trajectory consistent with the Paris Agreement goals, would limit potential global climate-related impacts, including physical climate change risks at our assets, and potentially generate significant value for our portfolio. The need to adapt also grows as the global average temperature rises, suggesting that transitioning to a 1.5°C world could limit the costs associated with adaptation in many regions, compared to higher temperature trajectories. We will also continue to advocate for actions in line with the Paris Agreement goals and seek partnerships to leverage our own investments in low emissions and negative emissions technologies and natural climate solutions.

**Figure 7. Critical uncertainties impacting BHP's commodities in a decarbonising environment**

Commodity	Critical uncertainties
<b>Iron ore</b>	<ul style="list-style-type: none"> <li>▲ Steel required to support infrastructure for electrification</li> <li>▶ Direct Reduced Iron (DRI) technology increases its share of the market</li> <li>▼ Electric arc furnace route is assumed to increase</li> </ul>
<b>Metallurgical coal</b>	<ul style="list-style-type: none"> <li>▲ Steel required to support infrastructure for electrification</li> <li>▲ Higher quality metallurgical coal ore preferred to support emissions reductions</li> <li>▶ CCUS is one of the lowest cost abatement technologies for steel plants in most regions</li> <li>▼ Increase in top gas recycling (TGR) and pulverised coal injection (PCI) substitution by partial hydrogen injection</li> </ul>
<b>Nickel</b>	<ul style="list-style-type: none"> <li>▲ Speed of electric vehicle and stationary power storage penetration</li> <li>▲ New supply incentivised</li> <li>▼ Increased recycling of nickel from batteries longer term</li> <li>▼ Potential move away from nickel-rich battery chemistries</li> </ul>
<b>Copper</b>	<ul style="list-style-type: none"> <li>▲ Electrification of primary energy demand across sectors and grid build out to support</li> <li>▼ Higher recycling rates and substitution</li> </ul>
<b>Gas</b>	<ul style="list-style-type: none"> <li>▲ Fuel switching to gas from coal and oil in harder-to-abate industries</li> <li>▲ Potential to retrofit remaining gas plants with CCUS</li> <li>▼ Forced early closure of gas-fired power</li> </ul>
<b>Oil</b>	<ul style="list-style-type: none"> <li>▲ New oil supply required to meet long term demand</li> <li>▼ Roll out of electric vehicles and substitution to lower carbon fuels in industrial uses</li> </ul>
<b>Uranium</b>	<ul style="list-style-type: none"> <li>▲ Steady growth in nuclear power to provide valuable zero emissions baseload</li> <li>▲ Small scale nuclear reactors to support industrial complexes</li> <li>▼ Challenge to gain social acceptance of nuclear power stations</li> </ul>
<b>Energy coal</b>	<ul style="list-style-type: none"> <li>▼ Forced early closure of coal-fired power plants</li> </ul>
<b>Potash</b>	<ul style="list-style-type: none"> <li>▲ Biomass crop production for first or second-generation bioenergy crops</li> <li>▼ Decrease in meat consumption and food wastage</li> </ul>

▲ Positive impact    ▶ Neutral impact    ▼ Negative impact

Figure 8. Rolling present value<sup>(1)</sup> relative to Central Energy View



(1) Present value of unlevered free cash flows. Data in this chart is based on our current portfolio and does not include any potential future divestments.



## 2.2 Reducing our GHG emissions

### Operational GHG emissions – short-term target

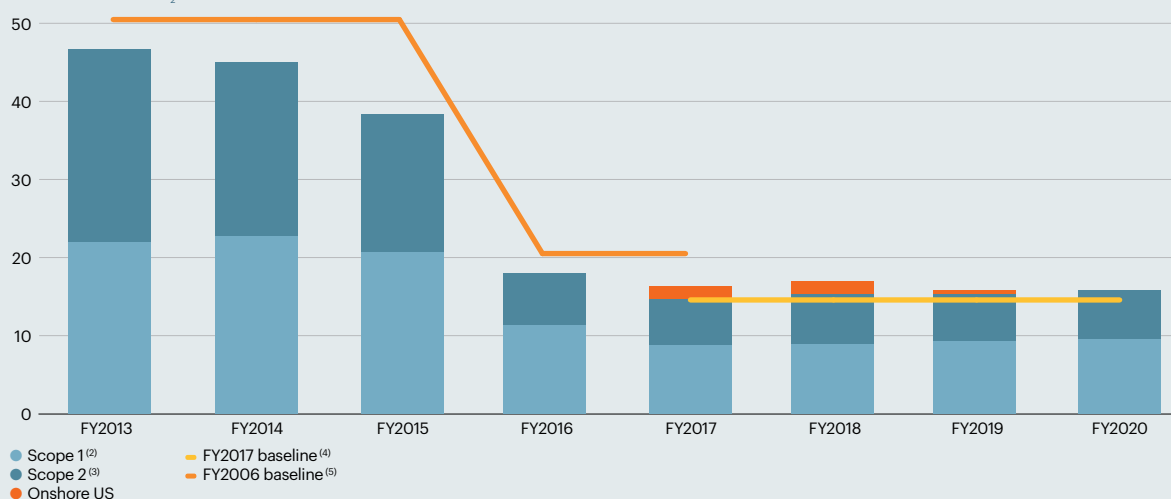
Reducing GHG emissions at our operated assets is a key component of our climate change strategy. We have set public GHG emissions reduction targets since the 1990s and regularly review them as our strategy and circumstances change. As shown in Figure 9, we have reduced our operational emissions in line with our targets. We have built our processes and developed a culture focussed on identifying opportunities for emissions reductions. As we track to a net-zero goal, it will be important to be even more innovative and seek collaborations to identify least cost abatement opportunities.

#### BHP's strong track record in meeting our GHG targets for operated assets

Year	Target <sup>(14)</sup>	Result
<b>FY1998</b>	Reduce GHG intensity by 10% by FY2000	Achieved 12% reduction
<b>FY2002</b>	Reduce GHG intensity by 5% by FY2007	Achieved 6% reduction
<b>FY2006</b>	Reduce GHG intensity by 13% by FY2017	Achieved 15% reduction
<b>FY2012</b>	Hold absolute operational GHG emissions below FY2006 baseline <sup>(15)</sup> by FY2017	Achieved target (21% below baseline)
<b>FY2017</b>	By FY2022, maintain operational GHG emissions at or below FY2017 levels <sup>(16)</sup> , while we continue to grow our business	On track

**Figure 9: Historical operational emission and targets<sup>(1)</sup>**

Millions of tonnes CO<sub>2</sub>-e



- (1) Scope 1 and 2 emissions have been calculated based on an operational control approach in accordance with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. Includes data for Continuing and Discontinued operations for the financial years being reported. Comparisons of data over the period FY2015 to FY2016 should be made with consideration of the divestment of South32 during FY2015 (FY2015 data excludes emissions from South32 operations between the date of the divestment and 30 June 2015). Data over the period FY2017 to FY2019 is displayed with Onshore US emissions shown separately for comparability (12 months of emissions in FY2017 and FY2018, and four months of emissions in FY2019 prior to divestment of this asset).
- (2) Scope 1 refers to direct GHG emissions from operated assets.
- (3) Scope 2 refers to indirect GHG emissions from the generation of purchased or acquired electricity, steam, heat or cooling that is consumed by operated assets. Our Scope 2 emissions have been calculated using the market-based method using supplier specific emission factors, in line with the Greenhouse Gas Protocol Scope 2 Guidance unless otherwise specified. A residual mix is currently unavailable to account for voluntary purchases and this may result in double counting between electricity consumers.
- (4) FY2017 is the base year for our current five-year GHG emissions reduction target, which took effect from FY2018. The FY2017 baseline has been adjusted for the divestment of our Onshore US assets to ensure ongoing comparability of performance. The baseline will continue to be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction; carbon offsets will be used as required.
- (5) The FY2006 baseline was adjusted as necessary for material acquisitions and divestments based on GHG emissions at the time of the applicable transaction. This was the baseline for our prior five-year GHG emission reduction target.

Our current short-term target for FY2022 is to maintain our total operational GHG emissions at or below FY2017 levels<sup>(17)</sup> while we continue to grow our business. While our annual emissions are currently higher than FY2017 levels, our asset-level emissions forecasts show we are on track to meet our FY2022 target, due primarily to implementation of renewable energy contracts in Chile in FY2022.

(14) Comparisons of target periods should be made with consideration of the divestments that occurred in those periods and adjustments to the baselines.

(15) The FY2006 baseline was adjusted as necessary for material acquisitions and divestments based on GHG emissions at the time of the applicable transaction. This was the baseline for our prior five-year GHG emission reduction target.

(16) FY2017 baseline will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.

(17) FY2017 baseline will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.



## Operational GHG emissions – FY2020 performance

Reducing our operational emissions is a key performance indicator for our business and our performance against our targets is reflected in senior executive and leadership remuneration. BHP has disclosed Scope 1 and Scope 2 emissions totals based on an operational control approach to boundaries for many years. In FY2020, BHP has for the first time also disclosed total emissions under a financial control approach and an equity share approach, providing more detail on emissions associated with our investments (refer to section 6.6.4 Climate change – performance data in the BHP Annual Report 2020, available online at bhp.com). BHP's operational emissions targets continue to be measured against our GHG emissions based on an operational control, market-based method. See the BHP Annual Report 2020 for more information.

**Table 1: Operational GHG emissions by source (million tonnes CO<sub>2</sub>-e)<sup>(1) (2) (3) (4)</sup>**

	Year ended 30 June			
	2020	2019	2018	2017
Scope 1 GHG emissions <sup>(5)</sup>	<b>9.5</b>	9.7	10.6	10.5
Scope 2 GHG emissions <sup>(6)</sup>	<b>6.3</b>	6.1	6.4	5.8
<b>Total operational GHG emissions</b>	<b>15.8</b>	15.8	17.0	16.3
<b>Total operational GHG emissions (adjusted for Discontinued operations)<sup>(7)</sup></b>	<b>15.8</b>	15.3	15.3	14.6
Operational GHG emissions intensity (tonnes CO <sub>2</sub> -e per tonne of copper equivalent production) <sup>(8)</sup>	<b>2.0</b>	2.4	2.4	2.2
Percentage of Scope 1 GHG emissions covered under an emissions-limiting regulation <sup>(9)</sup>	<b>79%</b>	74%	81%	79%
Percentage of Scope 1 GHG emissions from methane	<b>19%</b>	19%	21%	20%
Scope 2 GHG emissions (location based) <sup>(6)</sup>	<b>5.1</b>	5.1	6.1	6.0

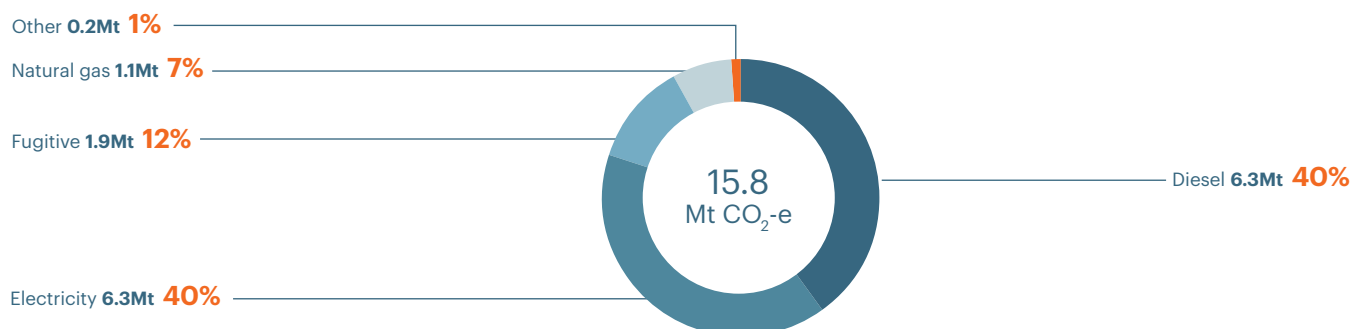
- (1) Unless otherwise noted, FY2017 and FY2018 data includes Continuing operations and Discontinued operations (Onshore US assets). Unless otherwise noted, FY2019 data includes Continuing operations and Discontinued operations (Onshore US assets) to 31 October 2018. Data in italics indicates that data has been adjusted since it was previously reported. FY2019 originally reported data that was restated is 5.0 million tonnes CO<sub>2</sub>-e for Scope 2 GHG emissions, 14.7 million tonnes CO<sub>2</sub>-e for total operational GHG emissions, and 2.2 tonnes CO<sub>2</sub>-e per tonne of copper equivalent production for operational GHG emissions intensity.
- (2) Calculated based on an operational control approach in line with World Resources Institute/World Business Council for Sustainable Development guidance. Consumption of fuel and consumption of electricity refers to annual quantity of energy consumed from the combustion of fuel; and the operation of any facility; and energy consumed resulting from the purchase of electricity, heat, steam or cooling by the company for its own use. Over 99.9 per cent of BHP's energy consumption and emissions occurs outside the UK and offshore area (as defined in the relevant UK reporting regulations). UK energy consumption of 222,368 kWh and emissions of 52 tonnes CO<sub>2</sub>-e is associated with electricity consumption from our office in London.
- (3) BHP currently uses Global Warming Potentials (GWP) from the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 4 (AR4) based on 100-year timeframe.
- (4) Scope 1 and Scope 2 emissions have been calculated based on an operational control approach (unless otherwise stated) in line with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. BHP Scope 1, 2 and 3 Emissions Calculation Methodology, available online at bhp.com/climate.
- (5) Scope 1 refers to direct GHG emissions from operated assets.
- (6) Scope 2 refers to indirect GHG emissions from the generation of purchased or acquired electricity, steam, heat or cooling that is consumed by operated assets. Our Scope 2 emissions have been calculated using the market-based method using supplier specific emission factors, in line with the Greenhouse Gas Protocol Scope 2 Guidance unless otherwise specified. A residual mix is currently unavailable to account for voluntary purchases and this may result in double counting between electricity consumers.
- (7) Excludes Onshore US assets, which were divested in FY2019.
- (8) Copper equivalent production has been calculated based on FY2020 average realised product prices for FY2020 production, FY2019 average realised product prices for FY2019 production, FY2018 average realised product prices for FY2018 production, and FY2017 average realised product prices for FY2017 production. Production figures used are consistent with energy and emissions reporting boundaries (i.e. BHP operational control) and are taken on 100 per cent basis.
- (9) Scope 1 emissions from BHP's facilities covered by the Safeguard Mechanism administered by the Clean Energy Regulator in Australia and the distillate and gasoline emissions from turbine boilers at the cathode plant at Escondida covered by the Green Tax legislation in Chile.

In FY2020, as shown in Table 1, operational emissions (Scope 1 and Scope 2) increased by 8 per cent from the adjusted FY2017 baseline and 3 per cent from FY2019, on a Continuing operations basis. The increase is a result of increased production and energy usage at Western Australia Iron Ore (WAIO), as well as increased energy usage at BHP Mitsubishi Alliance (BMA), BHP Mitsui Coal (BMC) and Nickel West. FY2018 and FY2019 GHG emissions have been restated due to a move from location-based (grid) emission factors to market-based emission factors (contract specific) at the Escondida and Pampa Norte (which includes Spence and Cerro Colorado) copper operations in Chile. The current electricity

supply contracts are with coal and natural gas powered suppliers, and therefore the emissions intensity of the contracted supply is significantly higher than the grid average. The change in emission factors was made to make BHP's reporting more consistent, as the market-based approach is the primary method of reporting when the relevant information is available.

As shown in Figure 10, the main sources of our operational emissions in FY2020 were electricity (40 per cent) and diesel (40 per cent). Fugitive emissions from coal mining and petroleum production accounted for 12 per cent of emissions and gas, used for power and heat generation, contributed 7 per cent of our operational emissions.

**Figure 10. BHP Operational GHG emissions FY2020 by source<sup>(1)</sup>**



(1) Scope 1 and Scope 2 emissions have been calculated based on an operational control approach in line with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. The BHP Scope 1, 2 and 3 Emissions Calculation Methodology document, available online at bhp.com/climate.

## Operational GHG emissions – medium-term target

In July 2019, we publicly committed to establish a medium-term, science-based target in 2020 to support achievement of our long-term goal to achieve net-zero operational emissions by 2050. In August 2020, BHP's Board approved a medium-term target to reduce operational GHG emissions (Scope 1 and Scope 2 from our operated assets) by at least 30 per cent from FY2020 levels<sup>(18)</sup> by FY2030.

The target year of FY2030 provides scope for realising significant decarbonisation opportunities, while establishing a

trajectory to meet our 2050 net-zero goal. It aligns with the date of many countries' nationally determined contributions (NDCs) made under the Paris Agreement. Based on the scope of these NDCs, we expect decarbonisation trends to accelerate significantly over the next decade. The baseline year of FY2020 represents the most recently completed operating year from which to measure our performance to FY2030, and is consistent with a science-based methodology to establish a target.

### Science-based targets

The IPCC provides a range of scenarios specifying the annual global GHG emissions that can be emitted to the end of the century to meet the Paris Agreement goals. Targets to reduce GHG emissions are considered 'science-based' if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. Using these scenarios, a science-based target for BHP can be developed by applying the same rate of reduction to BHP's emissions as the rate at which the world's emissions would have to contract in order to meet the relevant goal (known as the 'absolute contraction method'). Based on our analysis, our medium-term target of at least 30 per cent reduction by FY2030 against FY2020 levels<sup>(18)</sup> falls within the range of emissions reductions required in this timeframe to be considered aligned with the goals of the Paris Agreement.

To deliver this target, we are prioritising abatement opportunities that have low capital intensity and are technologically mature, and can deliver operating cost benefits to the business. Our priority is to invest in reducing our operational emissions, with limited use of carbon offsets. Our approach also provides opportunities to realise co-benefits, such as reduction in the potential exposure of our people to diesel particulate matter (through electrification of mining equipment at our operated assets) and support of biodiversity conservation through investments in natural climate solutions.



(18) FY2020 baseline will be adjusted for any material acquisitions and divestments based on GHG emissions at the time of the transaction. Carbon offsets will be used as required.

## Pathways to net zero emissions

Our medium-term operational emissions target for FY2030 was informed by our Pathways to Net Zero (P2NZ) emissions project that was established to understand opportunities to achieve and maintain net zero operational emissions by 2050. The project identified and quantified potential operational decarbonisation pathways, and has provided essential data to inform decision-making and prioritisation of BHP's investments in operational decarbonisation initiatives. We will prioritise emissions reductions at our operated assets over the use of offsets, particularly in the early part of this decade, however we expect that offsets may be required to reduce our hard-to-abate emissions, for example fugitive emissions from coal mining and petroleum production. As shown in Figure 10, electricity and diesel account for approximately 80 per cent of our current emissions profile and are a priority for our decarbonisation journey.

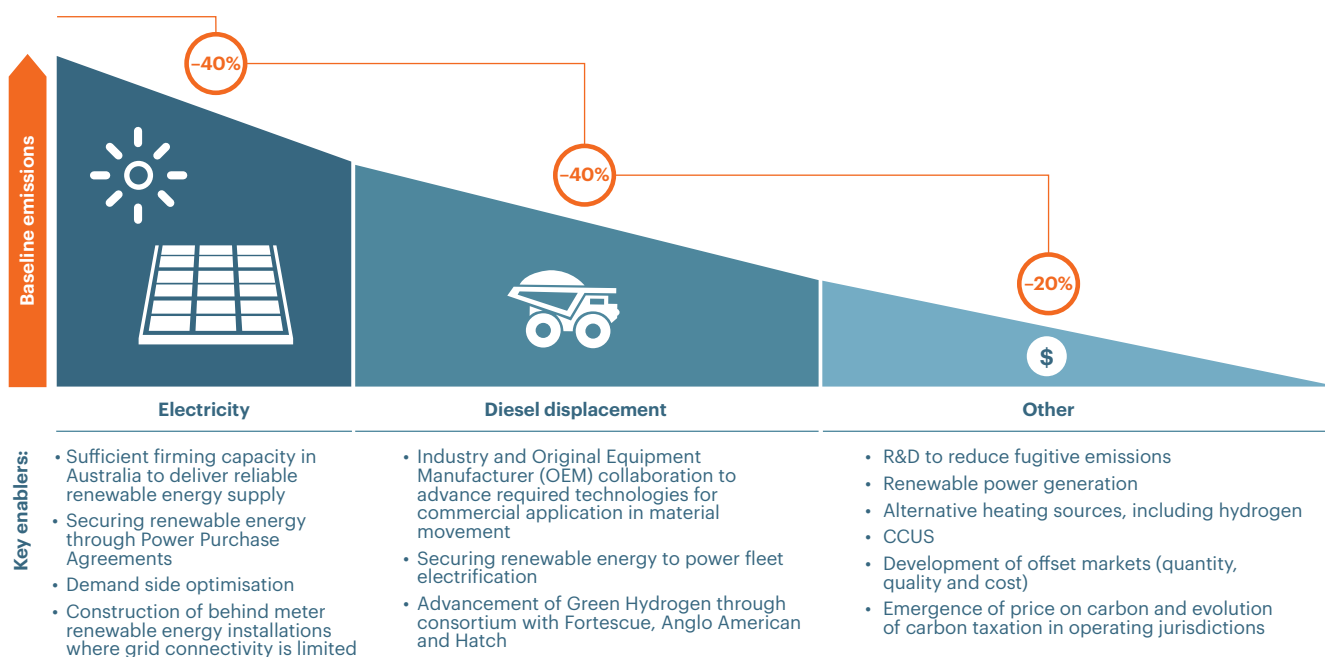
We plan to deliver our medium-term target by initially focusing on decarbonising our electricity supply, which will also facilitate electrification and diesel displacement in our mining

operations. The medium-term target execution plan comprises two distinct five-year phases. The first phase, spanning the current five-year plan period (FY2021-FY2025), is focused on converting purchased and self-generated electricity from fossil fuel-based supply to renewable sources and progressing feasibility studies for diesel displacement at our operated assets. Electricity decarbonisation represents a relatively low risk, first step that can be achieved in a capital efficient manner through leveraging commercial solutions. Potential capital spend over this five-year period could be in the range of US\$100 million to US\$200 million per annum.

In the second five-year phase (FY2026-FY2030), we will continue our focus on greening electricity as well as investing in diesel displacement associated with material movement, light vehicles and stationary equipment. Spend estimates in the second phase remain uncertain as studies continue to progress, technologies mature and new alternatives emerge. Our decarbonisation priorities are highlighted in Figure 11.

**Figure 11: The pathway to net-zero GHG emissions by 2050**

Renewable electricity is the first step to decarbonise our operations. As our electricity supply decarbonises, benefits can accrue via diesel displacement using electrification options in material handling. Our goal is to achieve net-zero emissions from our operations by 2050



### Decarbonisation of electricity supply

Use of electricity contributed about 40 per cent of operational emissions in FY2020. We will consider opportunities to contract higher levels of renewable generation in our power purchase agreements and install renewable energy generation and storage at our operated assets. Our Chilean copper operated assets at Escondida and Spence have put in place power purchase agreements for renewable electricity commencing from FY2022, and are on track to have 100 per cent renewable supply by the mid-2020s.

BHP has also signed a firm renewable power purchasing agreement to meet half of the electricity needs across Queensland Coal mines from low emissions sources. From late 2022, newly operational solar and wind farms are expected to

progressively contribute up to half of the electricity supply under this agreement. Combined with large-scale generation certificates, this will enable BHP to reduce Scope 2 emissions from electricity use in its Queensland operations by 50 per cent by 2025, based on FY2020 levels.

Planned electrification of the diesel fleet will increase our electricity consumption at our operated assets, which will require substantial investment in electricity generation, connection capacities and energy storage. Our electricity requirements are also anticipated to grow as a result of portfolio growth and increasing mining energy intensity trends due to lower ore grades, deeper pits and higher strip ratios.

## Pathways to net zero emissions continued

### Diesel displacement

Combustion of diesel contributed about 40 per cent of operational emissions in FY2020. Greater than 85 per cent of these emissions were associated with material movement by mining equipment. Transitioning the fuel source of material movement from diesel to renewable electricity can unlock value, given the higher efficiency of electric motors compared with relatively inefficient ICEs, in addition to switching to a lower cost fuel source.

The path to electrification of mining equipment will likely include solutions such as trolley assist, in-pit crush and convey, overland conveyors and battery solutions. Diesel displacement represents a higher risk, higher capital step towards decarbonisation, so a phased approach to execution is proposed with particular emphasis on Minerals Americas operated assets that are further advanced on the decarbonisation journey. Taking a transitional approach to electrification provides flexibility to allow for the potential for rapid development of emerging technologies and to resolve the complexities of integrating these technologies into existing operations.

During FY2021, we will seek to collaborate further with International Council on Mining and Metals members, industry and original equipment manufacturers (OEMs) to progress research and development to reduce costs and assess any potential impacts from electrified mining equipment solutions to replace current diesel options.

### Fugitive emissions

Fugitive emissions from coal mining and petroleum production in our operated assets contributed about 12 per cent of operational emissions in FY2020. We will also continue to consider opportunities and support research and development of technologies for hard-to-abate fugitive emissions. This includes a collaboration with San Diego State University and Manaaki Whenua – Landcare Research (NZ) to assess the viability of using methane-eating bacteria as biofilters, for abatement of methane in underground and open cut coal mines.

### Decarbonisation plans for operated assets

Each of our operated assets is developing decarbonisation plans. Individual decarbonisation investment decisions will be considered as part of the broader Capital Allocation Framework and while structural abatement is our preference, appropriate use of carbon offsets will be required to maintain operating flexibility and where technical or economic limitations warrant it. More information on the Capital Allocation Framework is available in section 1.2 Role and responsibilities of management and in the BHP Annual Report 2020 available online at [bhp.com](http://bhp.com).

### Moving to renewable energy in Chile and Australia

In FY2020, BHP entered into four new renewable power purchase agreements (PPAs) for its Escondida and Spence copper operations in Chile. The new contracts will meet current energy needs and also contain flexibility to help manage future demand. The separate contracts agreed by Escondida and Spence are 15-year contracts for 3 terawatt hours per year (TWh/year) to ENEL Generación Chile and 10-year contracts for 3TWh/year to Colbún. The ENEL contracts will begin in August 2021 and the Colbún contracts in January 2022. The contracts will effectively displace 3 million tonnes (Mt) CO<sub>2</sub>e per year from FY2022, compared with the fossil fuel based contracts they are replacing. The connection of North and South grids in Chile has increased the system redundancy to enhance reliability, and the hydro supply provides firming capacity for other renewable generation. Our new PPAs have triggered the development of new renewable generation capacity. About half of our new contracted supply will be met by existing capacity and the remainder from new capacity which is currently under construction. This new renewable generation will displace thermal generation, leading to a reduction in total emissions in Chile. The new PPAs also offer financial savings compared with existing arrangements.

BHP has also signed a firm renewable power purchasing agreement to meet half of the electricity needs across Queensland Coal mines from low emissions sources. The agreement, with Queensland's state-owned clean energy generator and retailer CleanCo, is intended to run for five years from 1 January 2021. This will effectively displace an estimated 1.7 million tonnes of CO<sub>2</sub>e between 2021 and 2025 – equivalent to the annual emissions of around 400,000 combustion engine cars. The agreement is the first of its kind signed by BHP in Australia. It will also support the development of new solar and wind farms in Queensland. Over the five-year agreement, power will be provided via the grid, and predominantly contracted from a combination of solar, wind, hydro and gas generation. For the first two years, power will be contracted from CleanCo's low emissions portfolio which includes hydro and gas generation assets. From late 2022, the newly operational solar and wind farms are expected to progressively contribute up to half the electricity requirements, with the remainder supported by CleanCo's low emissions portfolio. Combined with large-scale generation certificates, this will enable BHP to reduce Scope 2 emissions from its Queensland operations by 50 per cent by 2025, based on FY2020 levels.

## Low emissions technology strategy

Defining a pathway to net-zero GHG emissions for our long-life operated assets requires planning for the long term, and a deep understanding of the development pathway for low emissions technologies (LETs). Our LET Strategy has three elements. First, we work to adapt mature technologies such as light electric vehicles, in order to integrate them safely and effectively at our operated assets. Second, preparing for the medium term, we create road maps for the development and adoption of LETs that support our goal of net-zero emissions, which may include trials and demonstrations of technology in our production environments. Finally, we look for early-stage LETs that hold high potential for future results. For these emerging technologies, we seek opportunities for collaboration for research and development and other ways to accelerate their commercialisation.

For example, green hydrogen has the potential to enable decarbonisation at our operated assets. Green hydrogen is produced using electrolysis powered by renewable energy, with no associated operational emissions. BHP has formed a Green Hydrogen Consortium with Anglo American, Fortescue and Hatch to look at ways to collectively help to eliminate obstacles to the adoption of green hydrogen technologies and encourage innovative application in the resources sector and other heavy industries.

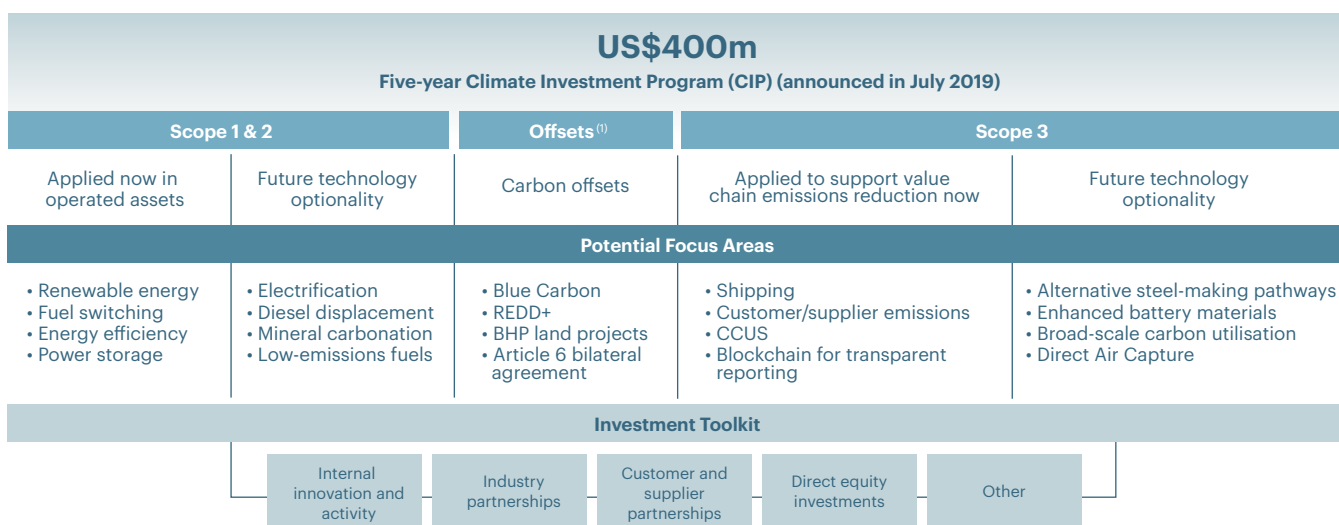
### Climate Investment Program

One of our key contributions to driving decarbonisation across our value chain is the Climate Investment Program (CIP), announced in July 2019. BHP will invest at least US\$400 million over the five-year life of the CIP. As outlined in Figure 12, we will invest to scale up LETs, invest in natural climate solutions and support partnerships to address Scope 3 emissions. The CIP is a demonstration of our commitment to take a product stewardship role in relation to our full value chain and to work with others to unlock GHG emissions reduction through projects, partnerships, R&D and venture investments. Projects will be balanced across our operated assets and value chain, with investment in a range of projects at different stages of technology maturity and risk. In line with our climate change strategy, initial investments will focus on reducing emissions at our Minerals (Australia and Americas) operated assets and addressing Scope 3 emissions in the steelmaking sector, particularly emerging technologies that have the potential to be scaled for widespread application. During FY2020, we developed a framework to identify and prioritise potential investments. Potential CIP projects have

to date requested approximately US\$350 million over five years. Establishing a robust pipeline of eligible projects is critical to drive prioritisation of the best projects across our operated assets and value chain, and to ensure that our emissions targets can be met alongside safety, production and cost targets.

Some of the currently prioritised CIP project proposals intend to evaluate the implementation of decarbonising technology that may be replicable at other BHP operated assets. These types of projects with replicable features will potentially generate additional investment opportunities and maintain a strong pipeline of investments to enable us to maximise returns from CIP funds. In FY2021, we will identify and implement additional investments to reduce our operational emissions and support reductions in value chain emissions. We plan to allocate a meaningful proportion of capital to early- and growth-stage technologies aligned with the CIP's long-term objectives, which will be managed by BHP Ventures, our newly-formed dedicated venture investment function.

Figure 12. Climate Investment Program (CIP)



(1) Our approach is not only to invest in projects that generate carbon offsets, but to prioritise investment in projects, initiatives or finance mechanisms that stimulate the market for additional offsets.

## 2.3 Partnering across our value chain

At BHP, we recognise the importance of taking action to support efforts to reduce emissions across our full value chain, as the emissions from our customers' use of our products are significantly higher than those from our operated assets. By definition, Scope 3 emissions occur outside of our operated assets, and are emissions over which we do not have operational control. We therefore seek opportunities to partner with others across our value chain to enable the reduction of these emissions.

### Value chain emissions – performance FY2020

**Table 2: Scope 3 GHG emissions by category (million tonnes CO<sub>2</sub>-e)<sup>(1)</sup>**

	Year ended 30 June			
	2020	2019	2018	2017
<b>Upstream</b>				
Purchased goods and services (including capital goods)	<b>16.9</b>	17.3	8.2	7.7
Fuel and energy related activities	<b>1.3</b>	1.3	1.4	1.4
Upstream transportation and distribution <sup>(2)</sup>	<b>3.8</b>	3.6	3.6	3.2
Business travel	<b>0.1</b>	0.1	0.1	0.1
Employee commuting	<b>0.2</b>	<0.1	<0.1	<0.1
<b>Downstream</b>				
Downstream transportation and distribution <sup>(3)</sup>	<b>4.0</b>	4.0	5.0	2.8
Investments (i.e. our non-operated assets) <sup>(4)</sup>	<b>3.9</b>	3.1	1.7	1.9
<b>Processing of sold products<sup>(5)</sup></b>				
Iron ore processing <sup>(6)</sup>	<b>205.6-322.6</b>	197.2-299.6	201.2-317.4	194.1-309.5
Copper processing	<b>5.2</b>	5.1	5.2	4.2
<b>Total processing of sold products</b>	<b>210.8-327.8</b>	202.3-304.7	206.4-322.6	198.3-313.7
<b>Use of sold products</b>				
Metallurgical coal <sup>(6)</sup>	<b>33.7-108.2</b>	34.7-111.4	35.0-112.3	32.5-105.5
Energy coal <sup>(7)</sup>	<b>56.4</b>	67.0	71.0	72.1
Natural gas <sup>(7)</sup>	<b>20.6</b>	28.3	36.4	38.3
Crude oil and condensates <sup>(7)</sup>	<b>17.9</b>	23.3	29.6	33.1
Natural gas liquids <sup>(7)</sup>	<b>1.9</b>	2.8	4.5	5.1
<b>Total use of sold products</b>	<b>130.5-205.0</b>	156.0-232.7	176.5-253.8	181.1-254.1

- (1) Scope 3 emissions have been calculated using methodologies consistent with the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Scope 3 emissions reporting necessarily requires a degree of overlap in reporting boundaries due to our involvement at multiple points in the life cycle of the commodities we produce and consume. A significant example of this is that Scope 3 emissions reported under the 'Processing of sold products' category include the processing of our iron ore to steel. This third party activity also consumes metallurgical coal as an input, a portion of which is produced by us. For reporting purposes, we account for Scope 3 emissions from combustion of metallurgical coal with all other fossil fuels under the 'Use of sold products' category, such that a portion of metallurgical coal emissions is accounted for under two categories. This is an expected outcome of emissions reporting between the different scopes defined under standard GHG accounting practices and is not considered to detract from the overall value of our Scope 3 emissions disclosure. This double counting means that the emissions reported under each category should not be added up, as to do so would give an inflated total figure. For this reason, we do not report a total Scope 3 emissions figure. Further details of the calculation methodologies, assumptions and key references used in the preparation of our Scope 3 emissions data can be found in the associated BHP Scope 1, 2 and 3 Emissions Calculation Methodology, available online at [bhp.com/climate](http://bhp.com/climate).
- (2) Includes product transport where freight costs are covered by BHP, for example under Cost and Freight (CFR) or similar terms, as well as purchased transport services for process inputs to our operations.
- (3) Product transport where freight costs are not covered by BHP, for example under Free on Board (FOB) or similar terms.
- (4) For BHP, this category covers the Scope 1 and Scope 2 emissions (on an equity basis) from our assets that are owned as a joint venture but not operated by BHP.
- (5) All iron ore production is assumed to be processed into steel and all copper metal production is assumed to be processed into copper wire for end use. Processing of nickel, zinc, gold, silver, ethane and uranium oxide is not currently included, as production volumes are much lower than iron ore and copper and a large range of possible end uses apply. Processing/refining of petroleum products is also excluded as these emissions are considered immaterial compared to the end-use product combustion reported in the 'Use of sold products' category.
- (6) Scope 3 emissions reported under the 'Processing of sold products' category include the processing of our iron ore to steel. This third party activity also consumes metallurgical coal as an input, a portion of which is produced by us. For the higher-end estimate, we account for Scope 3 emissions from combustion of metallurgical coal with all other fossil fuels under the 'Use of sold products' category, such that a portion of metallurgical coal emissions is accounted for under two categories. The low-end estimate apportions the emission factor for steel between iron ore and metallurgical coal inputs. The low-end estimate for iron ore only accounts for BHP's Scope 3 emissions from iron ore and does not account for BHP's or third party coal used in the steelmaking process. Scope 3 emissions from BHP's coal are captured in the 'Use of sold products' category under metallurgical coal.
- (7) All crude oil and condensates are conservatively assumed to be refined and combusted as diesel. Energy coal, Natural gas and Natural gas liquids are assumed to be combusted.

As shown in Table 2 and Figure 13, the most significant contributions to Scope 3 emissions come from the processing and use of our products, in particular from the use of our iron ore and metallurgical coal in steelmaking. Our analysis indicates that in FY2020, emissions associated with the processing of our non-fossil fuel commodities (iron ore to steel; copper concentrate and cathode to copper wire) were 210.8-327.8 Mt of CO<sub>2</sub>e. Emissions associated with the use of our fossil fuel commodities (metallurgical and energy coal, oil and gas) were 130.5-205.0 Mt of CO<sub>2</sub>e. Refer to Value chain emissions – methodology below in this section for an explanation of why there is a degree of overlap in reporting

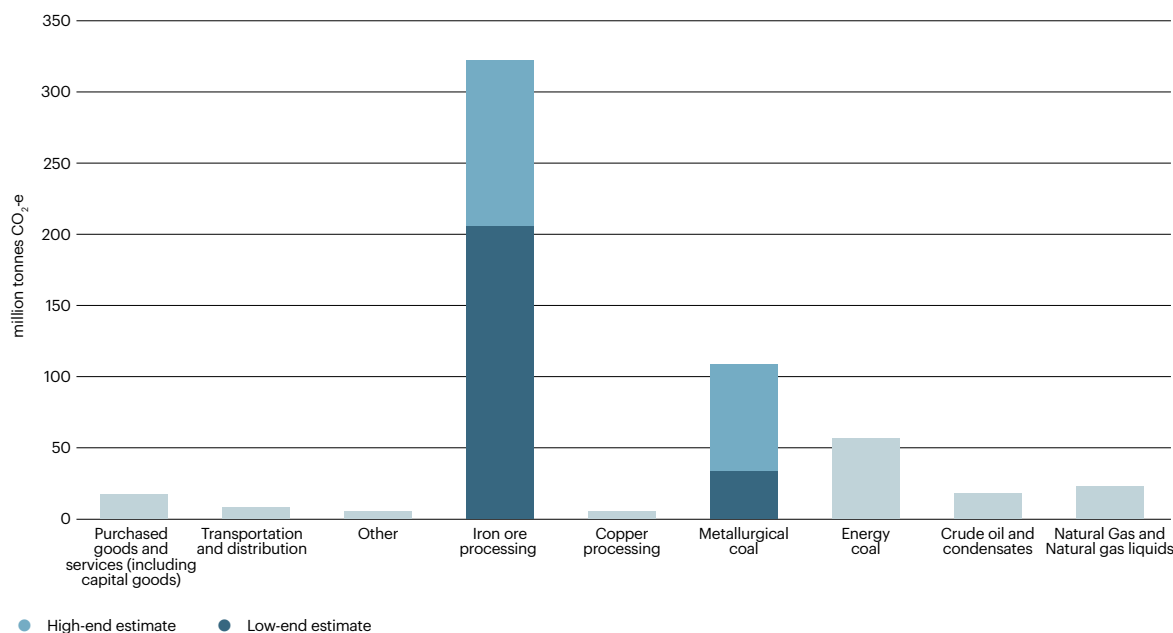
boundaries, due to our involvement at multiple points in the life cycle of the commodities we produce and consume. A significant example of a boundary overlap is between iron ore and metallurgical coal that results in a portion of metallurgical coal emissions being double counted across these two categories in the higher end estimate number. This means that the emissions reported under each category should not be added up, as to do so would give an inflated total figure. For this reason we do not report a total Scope 3 emissions figure.

This year we have also included a lower-end estimate of the Scope 3 emissions from the combustion of metallurgical coal that avoids the double counting of the emissions arising from iron and steel production. We have included the lower-end number in the estimate of our Scope 3 emissions, in part to reflect the different ways of calculating Scope 3 emissions, particularly when there is an overlap. The inclusion of two numbers also reflects the different uses for reported Scope 3 emissions. The first, larger number is suitable as a proxy for an assessment of carbon risk to the portfolio. The lower number,

calculated to avoid double counting, provides a more useful input into an assessment of the total Scope 3 emissions associated with our value chains.

Further details of the calculation methodologies, assumptions and key references used in the preparation of our Scope 3 emissions data can be found in the associated BHP Scope 1, 2 and 3 Emissions Calculation Methodology, available online at [bhp.com/climate](http://bhp.com/climate).

**Figure 13. Scope 3 emissions (million tonnes CO<sub>2</sub>e)<sup>(1)</sup> FY2020**



(1) We have included lower-end estimates of the Scope 3 emissions from the combustion of metallurgical coal that avoids the double counting of the emissions arising from iron and steel production. The lower-end estimates are reflected in the Iron ore processing emissions and Metallurgical coal emissions on the graph. For further detail, see the BHP Scope 1, 2 and 3 Emissions Calculation Methodology, available online at [bhp.com/climate](http://bhp.com/climate).

### Value chain emissions - methodology

We calculate Scope 3 emissions using methodologies consistent with the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Scope 3 Standard). This identifies five generally accepted principles: relevance, completeness, consistency, transparency, and accuracy.

In practice, calculating Scope 3 emissions sometimes requires trade-offs between principles. Our current calculation approach focuses primarily on achieving completeness. This has required the use of less accurate data for some emissions categories. For example, where primary data is unavailable, we use 'industry average' emission factors, or 'proxy' input data or assumptions. This means that the data is not necessarily representative of the specific activities taking place within our value chain, nor reflective of the quality of our products.

The current approach also means there is a degree of overlap in reporting boundaries for Scope 3 emissions, particularly in relation to emissions from the processing of our iron ore to steel, reported under the 'Processing of sold products' emissions category. Steel production also consumes metallurgical coal as an input, a portion of which is produced by us. For reporting purposes, we account separately for Scope 3 emissions from the use of our metallurgical coal with all other fossil fuels under the

'Use of sold products' category. This means that a portion of metallurgical coal emissions is double counted across two categories in the higher end estimate number.

This is an expected outcome of emissions reporting between the different scopes defined under standard GHG accounting practices, and is not considered to detract from the overall value of our Scope 3 emissions disclosure. This double counting means that the emissions reported under each category should not be added up. To do so would give an inflated total figure. For this reason we do not report a total Scope 3 emissions figure.

We are currently developing an enhanced approach to calculating, communicating and tracking Scope 3 emissions in our value chain that addresses the limitations described above, and better serves our decision-making needs and those of our stakeholders. Particularly in iron and steel, we will work to incorporate more detailed emissions factors for our largest customers in that sector, defined by process routes and geography.

In order to track our impact on long-term decarbonisation, we intend to measure the total emissions intensity (Scope 1, 2 and 3) for use of BHP's products. As there is no standard metric for total emissions intensity, in FY2021 we will work with leading groups to develop an appropriate methodology.

## Value chain emissions goals

In July 2019, we committed to set public goals related to Scope 3 emissions. During FY2020, we investigated BHP’s opportunities to enable emissions reductions through an analysis of our value chain and consultation with suppliers, customers, investors and other stakeholders.

Decarbonisation of the resources sector value chain is a shared global challenge that requires collaboration and long-term commitment. Our approach to reducing Scope 3 emissions is defined by three approaches and shown in Table 3:

- **actions** in FY2021 and then yearly thereafter;
- **goals** for 2030;
- **long-term vision** of steel sector and maritime sector decarbonisation in line with the Paris Agreement goals.

Our actions will be defined annually in a Scope 3 Action Plan, with performance against that plan linked to executive remuneration (see section 1 Governance, Remuneration policy and outcomes for more details). These actions will be aligned to the delivery of our Scope 3 2030 goals, and be guided by our long-term vision for sectoral decarbonisation.

We expect to contribute a substantial portion of the Climate Investment Program funds to activities that support BHP’s Scope 3 goals. Leveraging the contributions of others, we expect that addressing emissions across complex value chains will require significant investment from a range of stakeholders, reinforcing the value of partnerships to drive material change.

**Table 3. BHP’s Scope 3 Goals**

	FY2021 Actions	2030 Goals	Long-term Vision
<b>Processing and use of sold products</b>	Two partnerships with customers in the steelmaking sector Additional CCUS and Direct Air Capture (DAC) investments and contributions <sup>(19)</sup>	Support industry to develop technologies and pathways capable of 30% emissions intensity reduction in integrated steelmaking, with widespread adoption expected post-2030	Supporting the economy-wide transition necessary to meet the Paris Agreement goals by working with customers and suppliers to achieve sectoral decarbonisation
<b>Transportation of sold products</b>	Deliver initiatives on GHG emissions reductions (e.g. vessel selection, LNG tender and study into biofuel bunkering)	Support 40% emissions intensity reduction of BHP-chartered shipping of our products	

The emissions associated with the use of oil, gas and energy coal represent further opportunities for BHP to influence Scope 3 emissions. We are seeking further opportunities to work in collaboration with others to accelerate technologies that we believe can play an important role in reducing emissions associated with their use, for example CCUS and direct air capture (DAC). Refer to the Investing in technologies for the value chain section below for examples of our investments to date. We will continue to contribute efforts towards greater emissions reduction and offsetting in the power and petroleum sectors, and will support decarbonisation pathways for the value chains for oil, gas and energy coal.

### Value chain emissions goals – steel industry

The first of our Scope 3 goals for 2030 is focused on the processing and use of our products in steelmaking, as this represents the majority of emissions in our value chain, and we have the opportunity to support and leverage efforts to make a significant difference to global emissions reductions.

Through engagement, we know that many of our customers have set Scope 1 and Scope 2 emissions reduction targets for themselves. For example, the Japanese steel industry has committed to developing technology, by 2030, capable of delivering an approximately 30 per cent improvement in blast furnace emissions intensity. As the conventional blast furnace process approaches its efficiency limits, improvement will require investments in new technologies. Recognising our customers’ Scope 1 and Scope 2 commitments, we propose a 2030 goal to support industry to develop technologies and pathways capable of a 30 per cent emissions intensity reduction in integrated steelmaking, with widespread adoption expected post-2030.

This goal will likely be achieved through a combination of incremental improvements across the entire integrated steelmaking process including sintering, coke making, blast furnace and steelmaking operations. However, with the blast furnace representing the single largest source of GHG emissions from steelmaking, particular attention will be given to technologies that reduce blast furnace emissions, including raw material optimisation, modified blast furnace conditions such as hydrogen injection and oxygen enrichment, as well as technologies that include the use of renewable biofuels and CCUS.

In support of this medium-term goal, we will:

- Continue our engagement and technical collaboration with customers in the steel sector to drive more efficient utilisation of BHP’s products while working with our operated assets to deliver the right product qualities to our customers.
- Partner with leading steel mills and other stakeholders to accelerate the development and commercialisation of technologies that support greater efficiency and emissions reductions in the integrated steelmaking route.
- Improve our understanding of alternative steelmaking technologies and how BHP’s current and future products can support the adoption of such technologies.

(19) Current CCUS and DAC investments are described in Investing in technologies for the value chain section below.



### Value chain emissions goals – maritime industry

The second of our Scope 3 goals for 2030 is focussed on opportunities to work with major suppliers to reduce emissions in the maritime industry. In FY2020, maritime transport represented 7.5 Mt CO<sub>2</sub>e of the Scope 3 emissions in our value chain. As one of the world's largest dry bulk charterers, we therefore have the opportunity to influence action in a global industry where emissions are difficult to abate. The International Maritime Organisation (IMO) has estimated that international shipping accounts for about 2.2 per cent of global emissions and that emissions from international shipping could grow between 50 per cent and 250 per cent by 2050, mainly due to the growth in world maritime trade<sup>(20)</sup>.

While ammonia, hydrogen, and battery-powered dry bulk vessels have the potential to reduce future GHG emissions, liquefied natural gas (LNG) is capable of delivering commercially viable emissions reductions now. Introducing LNG-fuelled ships into BHP's maritime supply chain can virtually eliminate air emissions (SO<sub>x</sub> and NO<sub>x</sub>) and significantly reduce GHG emissions along the world's busiest bulk transport routes.

The IMO has set goals to reduce average GHG emissions intensity across international shipping by at least 40 per cent by 2030 and 70 per cent by 2050. In alignment with the industry, we propose a 2030 maritime goal to support 40 per cent emissions intensity reduction of BHP-chartered shipping of our products. We expect to achieve this through chartering choices, alternative fuel requirements, and technology to optimise voyages. As an initial action, we issued a world-first tender for lower-emissions LNG-fuelled bulk carrier vessels for iron ore transportation in July 2019. This is expected to lead to lower emissions of up to 34 per cent on a per voyage basis when compared to conventional vessels.

### Investing in technologies for the value chain

BHP is investing in a range of LETs and negative emissions technologies (NETs) to support emissions reductions outside our operating boundaries. While identifying quality, large-scale investments in recent years has proved challenging due to a range of factors, including changing government policies and constrained levels of financial support for breakthrough technologies, we are now seeing new opportunities emerge.

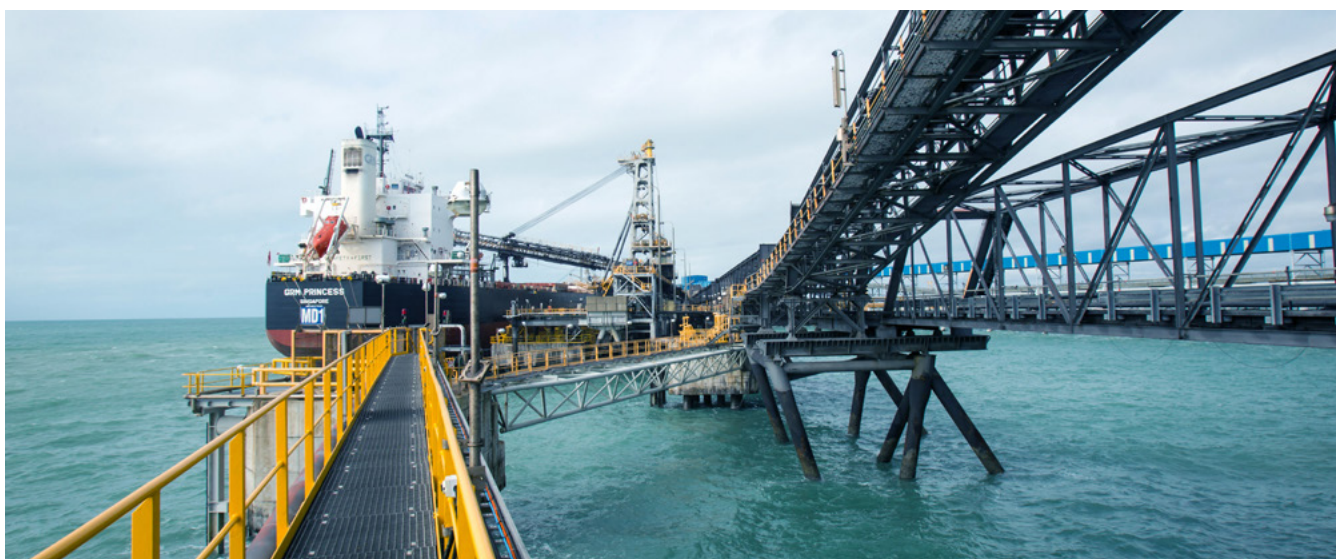
Our ongoing work on CCUS and DAC has evolved from a research and information sharing phase to an increasing focus on removing barriers to deployment and options to drive costs down. Our CCUS investments and partnerships focus on mechanisms to reduce costs and accelerate development timeframes. Our investments have included activities aimed at knowledge sharing from commercial-scale projects, development of sectoral deployment road maps and funding for research and development at leading universities and research institutes.

For example, we established the International CCUS Knowledge Centre, with an initial contribution of CAD\$20 million in FY2015, to share lessons from SaskPower's Boundary Dam CCUS project in Saskatchewan, Canada. The Knowledge Centre has contributed significantly to the development of CCUS through evidence-based, cost reduction studies and feasibility studies for a range of industries including the cement and power sectors. The current focus is on feasibility studies that incorporate the cost savings identified in existing projects. We have contributed US\$7 million to a program working with Peking University and other partners to identify the key policy, technical and economic barriers to CCUS deployment in the industrial sector, with a particular focus on the iron and steel industry in China.

We have also established a research collaboration between the University of Melbourne, University of Cambridge and Stanford University with an initial contribution of AUD\$3 million in FY2018 to support fundamental research into the long-term storage mechanisms of carbon dioxide in sub-surface locations. In FY2020, we also invested approximately US\$4 million in CO2CRC, a research project to develop subsurface storage technologies aimed at reducing the cost and environmental footprint of long-term carbon dioxide storage monitoring.

In 2019, we invested US\$6 million in Carbon Engineering Ltd to progress the development of a ground-breaking technology to reduce GHG emissions by accelerating the development of DAC, which removes carbon dioxide from the atmosphere.

We are seeking further opportunities to work in collaboration with others to accelerate technologies that we believe can play an important role in reducing emissions associated with the use of fossil fuels and in hard-to-abate sectors. Given the size of the task and the importance of these technologies to meet the Paris Agreement goals, it is important to leverage our skills and investments by working in partnerships across sectors.



(20) <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/GHG-Emissions.aspx>

## 2.4 Natural climate solutions strategy



Investing in natural ecosystems is a cost-effective and immediately available solution to mitigating climate change. Recent studies<sup>(21)</sup> have demonstrated that halting the destruction of tropical forests and allowing those forests to continue sequestering carbon, and regrowing at current rates can provide at least 30 per cent of all mitigation action needed to limit global warming to 2°C. Conserving, avoiding deforestation and restoring high-carbon ecosystems like forests – referred to as natural climate solutions – provide a ‘biological bridge’ to enhance the world’s ability to quickly reduce GHG emissions while other technologies ramp up.

BHP works to support the development of market mechanisms that channel private sector finance into projects that increase carbon storage or avoid GHG emissions through conservation, restoration and improved management of landscapes and wetlands. In 2014, BHP was among the first resource sector companies to integrate support for REDD+<sup>(22)</sup> investment into its climate change strategy. REDD+ incentivises developing countries to keep their forests standing by offering results-based payments for actions to reduce or remove GHG emissions.

Our REDD+ strategy was broadened in FY2020 to include investments in reforestation, afforestation and ‘blue’ carbon – the carbon stored in coastal and marine ecosystems (e.g. mangroves, tidal marshes and seagrasses). We focus on project support, governance and market stimulation for carbon credits generated by these projects.

In areas of national or international conservation significance, our approach may also involve funding through philanthropic grants to support the long-term sustainability of conservation, for example through enabling alternative livelihoods.

Examples of our REDD+ investments include a US\$5 million contribution over FY2017 and FY2018 to the Alto Mayo Conservation Initiative project in Peru and, through BHP’s US\$12 million support for the International Finance Corporation (IFC) Forests Bond to the Kasigau Corridor REDD Project –

Phase II The Community Ranches project. The IFC Forests Bond is an innovative finance mechanism that unlocks private sector finance for reducing deforestation, and provides investors

with an option to take investment returns in the form of carbon credits generated from Kasigau Corridor REDD Project in Kenya. The IFC issued the Forests Bond in October 2016, raising US\$152 million. In 2017, we launched the Finance for Forests initiative (a joint ongoing initiative with Conservation International and Pollination), which aims to encourage replication of BHP’s REDD+ investments, and the exploration of other innovative private finance tools to conserve forests and further advance natural climate solutions.

To date, our investments in REDD+ have contributed to the conservation of 382,000 hectares (ha) of land in areas of national or international conservation significance, comprising 182,000ha from our investment in the Alto Mayo REDD+ project in Peru and 200,000ha from our investment to support the Kasigau Corridor REDD project in Kenya. To put these numbers in perspective, the total area conserved to date is approximately 2.5 times BHP’s land disturbance footprint in 2019 (148,800ha, as reported in BHP’s FY2019 Sustainability Report).

In December 2019, we became a founding member of IETA’s<sup>(23)</sup> Markets for National Climate Solutions initiative, which aims to support development of global markets for carbon credits generated from natural climate solutions enabling private sector investment at scale. We also demonstrated further support for the Kasigau Corridor and Alto Mayo projects through the purchase of approximately 1.2 million and 220,000 additional verified carbon units (VCUs), respectively in FY2020.

In March 2020, under our Finance For Forests initiative, we issued a request for proposals for natural climate solutions projects/concepts, to be supported by market innovations. The aim is to support the development of another innovative financing mechanism to support a portfolio of natural climate solution projects. Submissions are currently being evaluated.

(21) For example, Griscom BW et al. 2020 National mitigation potential from natural climate solutions in the tropics. *Phil. Trans. R. Soc. B* 375: 0190126 <http://dx.doi.org/10.1098/rstb.2019.0126>

(22) REDD+ is the United Nations (UN) program for reducing emissions from deforestation and forest degradation.

(23) IETA is the International Emissions Trading Association.

## Carbon offset strategy

### Carbon offsets

The central purpose of a carbon offset for an organisation is to substitute for internal GHG emission reductions. Offsets may be generated through projects in which GHG emissions are avoided, reduced, removed from the atmosphere or permanently stored (sequestration). Carbon offsets are generally created and independently verified in accordance with either a voluntary program or under a regulatory program. The purchaser of a carbon offset can 'retire' or 'surrender' it to claim the underlying reduction towards their own GHG emissions reduction goals or to meet legal obligations.

BHP's approach to carbon offsetting is to manage our investments in carbon offset projects as external emissions reductions that are complementary to emissions reduction projects we are progressing at our operated assets as part of our decarbonisation strategy. Although we prioritise our internal abatement projects, we expect to have a requirement for offsets in order to deliver our net-zero goal, particularly to address 'hard to abate' emissions such as fugitive methane from coal production.

Common areas of scrutiny of offsets are:

**Additionality:** emissions reductions are only additional if they would not have occurred in the absence of a market for carbon offsets

**Permanence:** emissions reductions should be genuine and ongoing (e.g. in the case of forestry projects, the trees are not cut down or destroyed by natural disaster)<sup>(24)</sup>

**Leakage:** emissions reductions from a project should not cause emissions outside of its boundaries (e.g. a specific forest area is protected through carbon offsetting but another is destroyed in its place)

**Environmental and social integrity:** emissions reductions should not cause negative externalities (e.g. hydro-power projects that require clearing of forests and relocation of local communities)

Our Carbon Offset strategy, developed in FY2020, is designed to address these issues, based on a set of core principles:

- We will prioritise the reduction of our operational GHG emissions and continue to work with others to enhance the global response to climate change.
- We will source, hold, and retire carbon offsets as one element of our short and long-term activity to achieve a transition to net-zero operational GHG emissions by 2050.
- Carbon offsets will be preferentially sourced from projects that support sustainability goals (benefiting the environment and communities) and promote the carbon market.
- We will apply robust standards for the quality of offsets included as credits in our GHG emissions totals, including additionality and permanence.
- We will transparently disclose the carbon offsets retired to supplement our operational emissions pathway.

Based on these core principles, BHP's Carbon Offset strategy is to directly invest in projects that deliver sustainability co-benefits and a long-term supply of offsets. We will achieve this objective by working with others to promote the development of carbon market mechanisms (in particular for natural climate solutions), and build our own capability to manage those mechanisms. We expect to use offsets and regulatory credits to meet emission reduction commitments, and to support our ability to offer net zero products.

Our Carbon Offset strategy does not outline an allowable contribution of offsets toward our emission reduction commitments, for example, limiting the use of offsets to a certain percentage of our emissions footprint. In lieu of this approach, we are developing a quantitative investment metric that proposes to weigh our operational emissions medium-term target and long-term goal against an offset price forecast and an internal abatement project cost curve. This metric would be designed to help decision-makers evaluate the trade-off between reducing emissions internally and offsetting externally. This would differ from our carbon price forecasts (described in section 2.1 Portfolio analysis), which track regional compliance carbon markets and regulatory pricing schemes to assess observed and projected levels of decarbonisation ambition.

In line with our strategic principle to transparently disclose the carbon offsets retired to supplement our operational emissions reductions, our standard of disclosure for the inclusion of offsets in BHP emissions accounting includes:

- Relevant information on how the acquired offsets may support broader sustainability goals
- Upon retirement of voluntary offsets, the certified GHG emissions reduction that the unit represents will be subtracted from BHP's total GHG inventory for the year. The retirement of each offset represents the 'realisation' of the associated GHG emissions reduction quantity (usually in tonnes) achieved by the originating project
- Upon retirement of mandatory offsets retired under a regulatory scheme, no further adjustments will be made for BHP's total GHG inventory for the year
- Where compliance-related offset surrenders are not explicitly linked to regulatory reporting of GHG emissions in the jurisdiction, then an additional adjustment may be made to transparently include these units as negative emissions in BHP's total GHG inventory for the relevant year(s).

We are in the process of acquiring further voluntary offsets in the form of VCUs from two projects that have been certified against the Verified Carbon Standard Program, administered by Verra<sup>(25)</sup>:

- Alto Mayo Conservation Initiative<sup>(26) (27)</sup>,
- The Kasigau Corridor REDD Project – Phase II The Community Ranches<sup>(28) (29)</sup>,

Both of these projects have been validated and verified to the Climate, Community and Biodiversity (CCB) Standards<sup>(30)</sup>, also administered by Verra. The CCB Standards identify projects that simultaneously address climate change, support local communities and smallholders, and conserve biodiversity. The VCUs we have acquired from these projects bear the CCB label.

We have not retired any voluntary offsets to date, as we have prioritised structural reductions of our operational emissions.

(24) For most kinds of carbon offset projects, reversals (i.e. where greenhouse gases are subsequently emitted so that no net reduction occurs) are either physically impossible or extremely unlikely. In contrast, forestry projects mitigate climate change for as long as the carbon remains stored in the trees.

(25) <https://verra.org/>

(26) <https://www.conservation.org/stories/implementing-forest-conservation-in-perus-alto-mayo-region>

(27) <https://registry.verra.org/app/projectDetail/VCS/944>

(28) <https://www.wildlifeworks.com/kenya>

(29) <https://registry.verra.org/app/projectDetail/VCS/612>

(30) <https://verra.org/project/ccb-program/>

## 2.5 Adaptation strategy

Adaptation is the process of adjustment to actual or potential physical impacts of climate change in order to moderate harm or realise opportunities. We take a risk-based approach to adaptation, including consideration of the potential vulnerabilities of our operated assets, investments, portfolio, communities, ecosystems and our suppliers and customers across the value chain.

Risks related to the potential physical impacts of climate change include acute risks resulting from increased severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns.

We operate in zones prone to extreme weather events and are therefore exposed to potential disruptions such as failures of mining or processing equipment, loss of containment, mining infrastructure failures (e.g. power, water, rail and port), support infrastructure failures (e.g. technology services and office buildings), disruption to critical supplies (e.g. explosives stock) and adverse impacts to health and safety, including loss of life. We assess our risk of exposure to potential climate change impacts to be material, including the potential for more frequent and intense weather events, and increasing sea water levels that may result in disruptions (e.g. to port operations). Left unmanaged, physical climate change risks may threaten our sustainable long-term shareholder return objectives.

Physical climate change risks are considered by BHP to be both current and emerging material risks (see section 3 Risk management for more details). Physical climate change risks are potential threat multipliers for many of BHP's operational risks. For example, the existing operational risk of flooding is a potential threat to not only asset integrity, but to people, communities and environment. The physical climate-related risks we face may also derive from areas outside our control, such as our supply chain and markets.

At BHP, we have already identified potential threats from extreme weather events to our operations, and have adapted accordingly. Overtopping of port infrastructure at the Hay Point coal terminal in Queensland, for example, led to the identification and assessment of the risk of increasing storm intensity and storm surge levels during design of the facility's 2015 expansion. This resulted in the construction of higher marine infrastructure, including replacement trestle and a new, third loading facility, and re-assessment of the work scopes for future replacement of the older two loading facilities to similarly address overtopping risks. Cyclone disruption (e.g. production shutdown) at WAIO has led to adaptive management practices that allow WAIO to respond to the risk of an increase in cyclone intensity in the Pilbara region. Water scarcity and quality impacts have also led to desalination investments in Chile.

Our approach to climate change adaptation was established in 2014. In order to strengthen our approach, BHP undertook a series of assessments and engagements in FY2020. These included a questionnaire for our operated assets, industry benchmarking assessment, internal policy review and extensive engagements across BHP. Based on this engagement with the Functions and Assets teams, a gap analysis identified opportunities to improve consistency and comprehensiveness in how physical climate change risks are identified, assessed and managed across the business.

This work has informed the updating of our Adaptation Strategy which will be finalised in FY2021. Our previous work on adaptation also included our approach to offset-related investments, which is now set out in our Carbon Offsets strategy.

## Internal standards

BHP has existing commitments and requirements for climate adaptation, as expressed through Our Climate Change Position Statement, our Group-wide minimum mandatory standards for risk management, environment and climate change, water and tailings storage facilities and closure, and Our Social Value Plan. Requirements under the *Our Requirements for Environment and Climate Change* standard are designed to support and intersect with other key initiatives, including GHG emissions reduction, water stewardship and social value. Working collaboratively across these initiatives will help to minimise and mitigate the physical climate change risks to our business.

We recognise the importance of integrating physical climate change risks and adaptation assessment and planning into decision-making processes. For example, our operated assets are required to develop plans to build climate resilience into their activities and we require proposed new investments to assess and manage risks associated with potential physical impacts of climate change. An example is provided by our Petroleum business, which has specifically designed severe weather mitigation systems for Floating Production and Storage Offtake vessels (FPSOs). Although the FPSOs are connected to subsea oil and gas infrastructure, they have the capability to disconnect from this infrastructure, and can sail away from impending cyclonic or extreme weather events.

## Adaptation opportunities

Adaptation measures can both lower our exposure and enable any opportunities resulting from changes in weather and climate to be realised. The imperative to adapt may create opportunities for BHP by increasing the resilience of our operated assets and supply chain, enabling us to maintain continuity and reliability of supply of our products.

We must look beyond our own boundaries to identify physical climate change risks and opportunities across the value chain. Physical climate change risks have the potential to manifest across the whole production system, both controlled and non-controlled, and the wider environment in which we operate. Risks may also be interconnected, with more than one hazard potentially interacting to create a greater overall risk. Opportunities to collaborate and expand our learning are therefore crucial to ensure risks are managed in partnership with others and maladaptation is avoided.

Adaptation measures are also important in building resilience in our local communities and ecosystems. For example, we have worked with local communities to build resilience to physical climate change risks in Trinidad and Tobago, and we are working to identify appropriate service providers to deliver community climate change resilience solutions in the Antofagasta and Tarapacá regions of Chile.

## 2.6 Advocacy strategy

Climate change is a global challenge that requires collaboration, and industry has a key role to play in supporting policy development. We engage with governments and other stakeholders to contribute to the development of an effective, long-term policy framework that can deliver a low carbon economy. We prioritise working with others to enhance the global policy and market response, and support the development of market mechanisms that reduce global GHG emissions through projects that generate carbon credits. Our focus is on supporting climate action and longer-term policy frameworks that can deliver the goals of the Paris Agreement while providing stability for business. We are signatories to the UNFCCC 'Paris Pledge' that brings together cities, regions, companies and investors in support of the Paris Agreement.

We believe an effective policy framework should include a complementary set of measures, including a globally consistent price on carbon, support for low emissions and negative emissions technologies and measures to build resilience. We are a signatory to the World Bank's 'Putting a Price on Carbon' statement and a partner in the Carbon Pricing Leadership Coalition, a global initiative that brings together leaders from industry, government, academia and civil society with the goal of putting in place effective carbon pricing policies.

We also advocate for a framework of policy settings that will accelerate the deployment of CCUS. Modelling of 2°C and 1.5°C scenarios consistently highlight the critical role of LETs and NETs. This is why BHP is committed to catalysing action to accelerate CCUS commercialisation at scale and acceptable cost and is a member of the Global CCS Institute and the UK Government's Council on Carbon Capture Usage and Storage.

### Engagement and disclosure

Our climate change strategy is supported by active engagement with our stakeholders, including investors, policymakers and non-governmental organisations, and with peer companies where appropriate. Informed by this engagement, we regularly review our approach to climate change in response to emerging scientific knowledge, changes in global climate change policy and regulation, developments in LETs and NETs and evolving stakeholder expectations.

#### Investor engagement

We regularly engage with institutional shareholders and investor representative organisations in Australia, South Africa, Europe and the United States. During FY2020, management engaged with investors in Australia, Europe and the US, including Climate Action 100+ and the Australian Council of Superannuation Investors. Climate-related issues discussed with investors included the proposed medium-term target, Scope 3 goals, portfolio analysis, executive remuneration and offsets.

A series of formal and informal engagements took place in advance of the 2019 AGMs to discuss requisitioned shareholder resolutions and the approach BHP takes to industry associations and advocacy, in particular in relation to industry associations' advocacy on climate change. The launch of our Industry Association review was followed by additional formal engagements in Australia, the UK and in the Netherlands. Further information about the Industry Association review and our approach to industry association membership is set out below.

#### Forum on Corporate Responsibility

To help us engage with our stakeholders and ensure we have access to leading expertise, we regularly seek advice from external experts and forums on sustainability issues. The BHP Forum on Corporate Responsibility (FCR) is a key part of our stakeholder engagement program. The FCR

comprises independent civil society leaders in various fields of sustainability who provide insights into current and emerging issues, challenge our thinking and allow us to understand and consider the broader impacts of our actions. The FCR members provide input to our operational management teams as well as the BHP Board and its Sustainability Committee.

During FY2020, climate change was discussed during a meeting between the FCR and the Sustainability Committee. FCR members gave the Sustainability Committee feedback and insights formed from a presentation and discussion on BHP's review of its climate change strategy in the May 2019 FCR meeting. At the February 2020 meeting with the Sustainability Committee, the FCR discussed climate change views in Australia.

### Industry association review

BHP is a member of industry associations around the world. We believe associations can perform a number of functions that can lead to better outcomes on policy, practice and standards.

Over the past five years, there has been increasing stakeholder interest in the role played by industry associations in public policy debates, particularly in the context of climate change policy. We published our first industry association review in 2017, which sought to identify 'material differences' between BHP and our member associations on climate change policy. We repeated this exercise in 2018 and 2019. For the latter, we broadened our methodology to capture additional organisations and to provide an assessment of the extent of overall alignment between BHP and our association memberships on climate change policy. Outcomes from our 2019 review are set out in our 2019 Industry Association Review Report available online at [bhp.com](http://bhp.com).

Following our 2019 review, we commenced a process to understand how we could further enhance our overall approach to industry associations to ensure we maximise the value of our memberships. We have also taken further steps to address investor expectations around climate change advocacy by industry associations by engaging with a broad range of stakeholders from around the world, including investors, civil society groups, community groups and industry associations. As a result of that feedback, we decided to make the following key changes to our approach to industry associations:

- We developed and published our Global Climate Policy Standards<sup>(31)</sup>, which are intended to provide greater clarity on how our climate change policy positions should be reflected in our own advocacy and that of associations to which we belong.
- We announced our intention to work with the various associations that represent the minerals sector in Australia to develop and agree a protocol for the allocation of advocacy accountabilities at the national and state levels, the purpose of which would be to define the policy areas on which the associations advocate, having regard to their jurisdictional responsibilities.
- We announced our intention to work with key associations in Australia to develop and publish an annual advocacy plan, the purpose of which would be to provide stakeholders with greater transparency on the policy priorities and activities of the associations.
- We made a number of enhancements to our own disclosure of our industry association memberships, to provide more information on our material association memberships, disclose in 'real time' if a relevant association substantially departs from our climate change policy standards, and update our industry association review process.

(31) [https://www.bhp.com/-/media/documents/ourapproach/operatingwithintegrity/industryassociations/200814\\_globalclimatepolicystandards---aug20.pdf?la=en](https://www.bhp.com/-/media/documents/ourapproach/operatingwithintegrity/industryassociations/200814_globalclimatepolicystandards---aug20.pdf?la=en)

# 3 Risk management

## 3.1 Risk Framework

BHP applies a single, Group-wide approach to the management of risk, known as the Risk Framework. This framework helps to protect us against potential negative impacts, enables us to take risk for strategic reward and improves our resilience against emerging risks. As shown in Figure 14, there are four pillars in our Risk Framework: risk strategy, risk governance, risk process and risk intelligence.

Figure 14. Risk Framework



### Risk strategy

#### Group Risk Architecture

The Group Risk Architecture is a tool to identify, analyse, monitor and report risk, which provides a platform to understand and manage the risks to which BHP is exposed.

Risks in BHP’s risk profile are connected to a Group Risk. An overview of Group Risks is provided in the Strategic Report in the BHP Annual Report 2020 available online at [bhp.com](http://bhp.com). This approach gives the Board and management visibility over the aggregate exposure to risks on an enterprise-wide basis and supports performance monitoring and reporting against BHP’s risk appetite. Climate change is a Priority Group Risk for BHP. Potential climate change impacts are also taken into consideration when assessing certain risks that are grouped under other categories.

In FY2020, a series of global workshops were conducted with some of our Asset teams to identify and assess existing business risks that may be intensified by future climate change, and any potential new business risks that may be driven by climate change. We used the workshop findings to compile a climate-related risk library as a resource across the business. In FY2021, we aim to continue that process, in order to identify and evaluate adaptation actions and to focus on further development of Group-wide strategic climate-related risk assessments. See section 2.5 Adaptation strategy for more details.

 See section 2.5 Adaptation for more details.

#### Risk appetite

BHP’s Risk Appetite Statement has been approved by the Board and is a foundational element of our Risk Framework. It provides guidance to management on the amount and type of risk that is acceptable, and key risk indicators are set by management to help monitor performance against our risk appetite. It is made up of a qualitative statement for each Group Risk category that describes the nature and extent of risk we are prepared to take in pursuing our objectives.

We use key risk indicators (KRIs) to assist in identifying whether BHP is operating within or outside of our risk appetite, as defined in our Risk Appetite Statement. They also support decision making by providing management with information about financial and non-financial risk exposure at the Group level. Current KRIs for the Group Risk of climate change include GHG emissions relative to the adjusted FY2017 baseline and BHP’s rating on external climate-disclosure benchmarks.

### Risk governance

Risk management accountability and oversight is an integral part of BHP’s governance. The Board reviews and considers BHP’s risk profile, covering operational, strategic and emerging risks, based on the Material Risk Report. The report includes an overview of the risk profile, summary of material changes to the profile, performance against KRIs, summaries of our priority Group Risks and updates on emerging risk themes. The Risk and Audit and the Sustainability Committees assist the Board with the oversight of risk management.

## Risk process

Our Risk Framework requires the identification and management of risks to be embedded in business activities through the following processes:

- risk identification: new and emerging risks are identified and each is assigned an owner, or accountable individual, in the part of the business where the risk occurs
- risk assessments: risks are assessed with the most appropriate technique to determine their potential impacts and likelihood, prioritise them and inform risk treatment options
- risk treatment: controls are implemented to prevent, reduce or mitigate downside risks and increase the likelihood of opportunities being realised
- monitoring and reviewing: risks and controls are reviewed periodically and on an ad hoc basis to evaluate performance

Our Risk Framework includes requirements and guidance on the tools and process to manage all risk types (current and emerging).

We recognise the importance of integrating climate-related threats and opportunities into BHP's decision-making and strategy formulation. Climate-related scenarios, themes and signposts are used to inform BHP's strategy. Climate-related risks are assessed alongside the other threats and opportunities that BHP faces when making capital expenditure decisions or allocating capital through BHP's Capital Allocation Framework. BHP's Risk Framework helps identify these risks for input to the prioritisation of capital and to investment approval processes.

Climate-related risks, and decisions driven by consideration of these risks, may result in financial reporting implications including the impairment of the Group's asset carrying values. Indicators of impairment may include:

- changes in the Group's operating and economic assumptions, including those arising from changes in reserves or mine planning
- updates to the Group's commodity supply, demand and price forecasts (which include carbon price forecasts)
- possible additional impacts from emerging risks such as those related to climate change and the transition to a low carbon economy

BHP uses the 'three lines of defence' model of risk governance and management to define the relationships and roles of different teams across the organisation in managing risk. The first line of defence is management across our Functions and Asset teams, who identify risk and implement controls. Management in the functions that define Group-wide minimum standards and provide subject matter expertise form the second line of defence. The third line of defence is carried out by Internal Audit and Advisory (IAA). IAA provides independent assurance to management and the Board as to whether the systems of risk management, internal control and governance are adequate. An annual Internal Audit Plan is reviewed, approved and monitored by the RAC. As part of the Internal Audit Plan, IAA undertakes assurance of risks, including those under the Group Risk category of Environment, Climate Change and Community.

## Risk intelligence

Board and senior management are provided with insights on trends and aggregate exposure for our most significant risks, including climate change-related risks, as well as performance against risk appetite, by the Risk team. The Board also receives reports from other teams to support its robust assessment of BHP's emerging and current risks, including internal audit reports and the Chief Executive Officer's report.

For more detail on how the Board and senior management consider climate change in our strategy and planning, see section 2 Taking action through targets, goals and strategies.

### 3.2 Climate-related risks

Risks associated with climate change and the transition to a low carbon economy could affect the execution of our strategy, the expansion of our portfolio and the ability of our assets to operate efficiently. The complex and pervasive nature of climate change means that it can act as an amplifier of other risks across BHP's risk profile. For example, greater risk of extreme weather increases both the likelihood and potential impact of risks to the integrity of BHP's assets. Climate-related risk events also have the potential to manifest across environmental, economic or other systems. For example, a severe climate event may impact one of our assets and may also spur a non-linear societal or regulatory response in a key market in a different jurisdiction. In particular, climate change may cause changes in water availability, sourcing, and quality. This may affect production, for example through a lack of available water for ore processing, or cost, for example through increased charges to access water. Extreme temperature changes may also affect our employee and community safety, operations, supply chain, transport needs and the natural environment surrounding our operations.

Efforts to mitigate and adapt to climate change can also produce opportunities for BHP, for example through resource efficiency and cost savings, and building resilience along the supply chain to support business continuity. External to the business, opportunities may result from the adoption of low-emission energy sources requiring resources supplied by BHP, demand for our commodities, new products and services and access to new markets.

Climate-related risks can be grouped in two categories: transition risk and physical risk.

#### Transition risks

Transition risks arise from policy, regulatory, legal, technological, market and other societal responses to the challenges posed by climate change and the transition to a low carbon economy.

The production and use of fossil fuels receive scrutiny from a range of stakeholders, including governments, investors, NGOs and communities. This is because the combustion of fossil fuels is a significant source of GHG emissions. We produce fossil fuels (energy coal, oil and gas) used primarily in the transport and electricity generation sectors, as well as fossil fuels and other commodities that are used as inputs to emissions-intensive industrial processes (including metallurgical coal and iron ore used in steelmaking). We also use fossil fuels in our mining and processing operations either directly or through the purchase of fossil fuel-based electricity. We therefore have already been and may be further impacted by policies and regulations that reduce GHG emissions, including from the resources, electricity generation, transport and industrial sectors.

Technological and market-related risks include the substitution of existing technologies with lower emissions options, such as renewables, particularly in the electricity generation and transport sectors, which have the potential to reduce demand for fossil fuels. As we noted in section 2.1 Portfolio analysis, a strong trend to renewables, supported by battery storage, can also create opportunities for BHP due to the increased demand for copper and nickel.

### Potential impacts

Assessments of the potential impact of future climate change policy, regulatory, legal, technological, market, societal and environmental outcomes are uncertain given the wide scope of influencing factors and the many countries in which we do business. Some of the significant risks to BHP from the transition to a low-carbon economy are outlined below.

- The Group's asset carrying values or financial performance may be affected by any adverse impacts to reserve estimates or market prices that may occur if, for example, reserves are rendered incapable of extraction or demand for fossil fuel commodities (such as petroleum and energy coal) decreases due to policy, regulatory (including carbon pricing mechanisms), legal, technological, market or other societal responses to climate change in our operating jurisdictions or markets.
- Climate change may increase competition for, and the regulation of, limited resources, such as power and water, which are critical to the operation of our business. This could affect the productivity of our assets and the costs associated with our assets.
- We are impacted by current and emerging policy and regulation aimed at reducing GHG emissions from the resources, electricity generation, transport and industrial sectors, including the introduction of carbon pricing mechanisms. Climate change policy and regulation, as well as changes to international reporting standards on climate change and pressure from society for more rapid and aggressive action from governments and companies, may reduce demand for our products, increase our costs and affect our business and stakeholders, including by reducing investor confidence.
- Increased scrutiny of applications for licences, permits and authorisations required to develop our assets and projects, including third parties contesting such applications. This could delay, limit or prevent future development of our assets or affect the productivity of our assets and the costs associated with our assets.
- The Group's reputation and financial performance may be impacted by concerns regarding the contribution of fossil fuels to climate change (e.g. some financial institutions and other institutional investors have declared an intention to exit certain commodities that are seen to be associated with climate change, such as energy coal). Impacts could affect our share price, reduce investor confidence, constrain our ability to access capital from financial markets, or result in an inability or increase in cost to insure our assets.



We discuss the opportunities for our commodities in section 2.1 Portfolio analysis.

### Physical risks

Risks related to the potential physical impacts of climate change include acute risks resulting from increased severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns, for example, potential changes in precipitation patterns, water shortages, rising sea levels, increased storm intensities, higher temperatures and natural disasters.

### Potential impacts

Physical climate change risks may manifest across the whole production system (including our suppliers and customers), both within and outside BHP's control. Extreme weather and environmental events can affect our assets by impacting on the safety and health of their operating teams and on production targets. Risks related to the potential physical impacts of climate change on our business may affect us directly, such as by causing damage to our assets, or indirectly, such as through value chain disruptions, or a combination of both. They may also impact the wider environment in which we operate, including the natural environment, communities and other stakeholders.

Physical climate change risks have the potential for a wide range of material impacts and can affect BHP's relationships with, and be viewed negatively by, the community and other stakeholders, including:

- adverse impacts to the health and safety of our people
- adverse impacts to our assets, which may affect our business, including through reduced productivity, increased costs and project schedule delays
- disruptions to our supply chains, transport and distribution networks, customers' facilities and the markets in which we sell our products.

We take a risk-based approach to adaptation, including consideration of the potential vulnerabilities of our operated assets, investments, portfolio, communities, ecosystems and our suppliers and customers across the value chain.



For more detail, see section 2.5 Adaptation strategy.

We also look to contribute to community and ecosystem resilience. Through our Social Investment Framework, we work with strategic partners and communities to invest in voluntary projects that contribute to the management of areas of national or international conservation significance and offer climate resilience co-benefits. Since 2011, we have contributed more than US\$77 million to biodiversity conservation through our alliance with Conservation International and other partners. See section 2.4 Natural climate solutions strategy for more details.

### Transition and physical risks

The following threats, which are common to risks related to both the physical impacts of climate change and the transition to a low carbon economy, may also materially and adversely affect our business:

- increased costs for mitigation, offsets or financial compensatory actions or obligations, including taxes and royalties
- restricted access to capital or an inability to attract or retain employees
- adverse impacts to the environment, communities, human rights and social wellbeing, which could affect our relationships with, and be viewed negatively by, the community and other stakeholders and damage our reputation
- opposition to new projects or our entry to new jurisdictions by communities, including through legal or social action, or other loss of business opportunities
- the Group may be subject to or impacted by climate-related litigation (including class actions), associated costs and reputational damage



### 3.3 Emerging risks

Emerging risks are newly developing or changing risks that are highly uncertain and difficult to quantify. They are generally driven by external influences and often cannot be prevented, although they can be prepared for. They also tend to be interconnected and often require solutions that draw upon expertise from across our organisation. BHP's approach to emerging risks focuses on maintaining a robust view of the changing external environment and building our resilience and capacity to respond.

Many climate change risks are sufficiently well understood to be treated as current risks, and enable us to implement controls to prevent, reduce or mitigate their impact on BHP. However, as our understanding of climate science continues to develop, new technologies are explored and responses to climate change evolve, new risks are emerging. Effective management of emerging risks is critical to strengthening our resilience to foreseeable changes as well as our ability to capture opportunities arising from climate change.

In FY2020, we introduced an enterprise-level 'watch list' of themes that provides an evolving view of the changing external environment and how it might have an impact on our business. This watch list includes 'non-linear climate change'. This theme addresses the potential for the climate system to pass through 'tipping points', which could trigger abrupt impacts that make adaptation difficult.

Once identified, our focus for emerging risks is on reducing the impact should an event occur, and on advocacy efforts to reduce the likelihood of the risks manifesting (for example, advocating for public policy responses to mitigate greenhouse gas emissions). We apply contingency controls, such as response plans, to emerging risks that are outside our appetite. These controls increase the resilience of BHP to shocks from the external environment.

## Looking ahead

### Our commitments provide a pathway for action

This Report is a foundation for action. We have laid out a comprehensive series of metrics, targets and goals. We have committed to holding management to account through a direct linkage of climate-related targets and goals to executive remuneration. And we have affirmed our commitment to advocate for public policy in pursuit of global decarbonisation. We will remain alert to technological, political and societal developments that may indicate changes to our signposts and the development of new uncertainties for our portfolio analysis. We will continue to monitor developments and review our approach as necessary, to respond to evolving approaches to climate change and climate-related disclosures.

### A shared global challenge

We also recognise our role in collaborating with others to achieve progress in managing the challenges of climate change. Without collaboration, the world will not be able to achieve the goals of growth, equity and decarbonisation for the long-term. The challenges inherent in our 1.5°C scenario illustrate the scale of the task ahead. We will seek opportunities to work with partners to commercialise, at scale and acceptable cost, low emissions and negative emissions technologies that are critical for the transition to a 1.5°C world.

These technologies include carbon capture, utilisation and storage (CCUS), direct air capture (DAC) and the natural climate solutions of reforestation and afforestation. Consideration of the 1.5°C scenario in our portfolio analysis highlights that the world needs these technologies without delay and at scale. We will continue to seek opportunities to collaborate with value chain partners, investors, researchers and governments to work towards net-zero emissions globally by 2050.

### Building a better world

Ultimately, BHP's business is founded on providing the resources that communities and nations need to build better lives for their citizens today, and to create a brighter future for the decades to come. Building that future around a stable climate would mean that the potential of the resources we produce is maximised, their value should be higher, and the quality of life of hundreds of millions of people around the world would be better.

The external landscape of climate-related corporate governance standards has evolved significantly over the past decade, particularly since 2015 when the Paris Agreement was negotiated. BHP participates in a range of climate-related standards, voluntary initiatives and public commitments as shown here.

### Standards and ratings performance

 <p>Top ranking of 1 (scale of 1-10)</p>	 <p>A-</p>	<p><b>Transition Pathway Initiative</b></p> <p>One of only 8 companies that score 4* – satisfy all of the criteria</p>	 <p>Sustainability reporting prepared in accordance with comprehensive-level reporting years</p>	 <p><b>CHRBC</b> Corporate Human Rights Benchmark</p> <p>Score of 71.6% (Top 5). More than half of benchmarked companies scored less than 20%</p>
 <p>(1)</p>	<p><b>S&amp;P Global Ratings</b></p>	 <p>a Morningstar company</p> <p>Ranked in 69th percentile</p>		

### Voluntary initiatives and public commitments

 <p>International Council on Mining &amp; Metals</p>	 <p>WE SUPPORT UN GLOBAL COMPACT</p>	 <p>Extractive industries Transparency Initiative</p>	 <p>RECONCILIATION ACTION PLAN <b>ELEVATE</b></p>	 <p>VOLUNTARY <b>PRINCIPLES</b> ON SECURITY &amp; HUMAN RIGHTS</p>
 <p>SUSTAINABILITY ACCOUNTING <b>SASB</b> STANDARDS BOARD</p>	 <p><b>Responsible Mining Index</b></p>	 <p><b>Responsible Steel</b> standards &amp; certification</p> <p>Business membership</p>	 <p><b>TCFD</b> TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES</p>	 <p><b>FTSE4Good</b></p>

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**Our Conclusion:**

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that suggests that BHP's Climate Change Report 2020 ('the Report') disclosures in accordance with the Recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD), including the reasonableness of assumptions and approach supporting BHP's scenario analysis, have not been prepared and presented fairly, in all material respects, in accordance with the criteria defined below.

**What our review covered**

Ernst & Young (EY) was engaged by BHP to provide limited assurance over the following information ('subject matter') in accordance with the noted criteria:

- ▶ BHP's disclosures in relation to the TCFD Recommendations, as presented in BHP's Climate Change Report 2020 ('the Report')
- ▶ The assumptions and approach supporting BHP's scenario analysis and portfolio analysis.

**Criteria applied by BHP:**

The criteria for our assurance engagement ('Criteria') include the following:

- ▶ Recommendations of the Task Force on Climate-related Financial Disclosures
- ▶ World Resources Institute/ World Business Council for Sustainable Development (WRI/WBCSD) Greenhouse Gas Protocol.

The criteria also include the list of principles that have been used by BHP to determine the approach to reporting against the TCFD recommendations, including the assumptions and approach supporting BHP's scenario analysis and potential portfolio implications, and are as presented below:

- ▶ Reasonableness, including
  - ▶ Transparency – that the Climate Change Report details the assumptions and approach undertaken by BHP to assess and manage climate risks and opportunities
  - ▶ Neutrality – that BHP's approach to assessing climate risk and opportunity neither overstates, nor understates the impact
  - ▶ Relevance – that BHP's approach and assumptions appropriately considers geographic location and commodity implications
- ▶ Completeness – that the approach considers all material climate risks and opportunities
- ▶ Replicability – that the approach allows for consistent assessment and evaluation of the impacts of climate risks and opportunities, including BHP's management approach.

**Key responsibilities**

**EY's responsibility and independence**

Our responsibility was to express a limited assurance conclusion on the noted subject matter under "What our review covered".

We were also responsible for maintaining our independence and confirm that we have met the requirements of the APES 110 Code of Ethics for Professional Accountants including independence, and have the required competencies and experience to conduct this assurance engagement.

**BHP's responsibility**

BHP's management was responsible for selecting the Criteria and preparing and fairly presenting the Subject Matter in the Climate Change Report 2020 in accordance with that Criteria. This responsibility includes establishing and maintaining internal controls, adequate records and making estimates that are reasonable in the circumstances.

**Our approach to conducting the review**

We conducted this review in accordance with the International Federation of Accountants' *International Standard on Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* (ISAE 3000), *Assurance Engagements on Greenhouse Gas Statements* (ISAE 3410), *Assurance Engagements Involving Corporate Fundraisings and/or Prospective Financial Information* (ISAE 3450) and the terms of reference for this engagement as agreed with BHP on 29 June 2020.

**Summary of review procedures performed**

A review consists of making enquiries, primarily of persons responsible for preparing the Climate Change Report 2020 and related information, and applying analytical and other review procedures.

Our procedures included:

- ▶ Interviewing key personnel to understand the reporting process, including management's processes to identify BHP's material climate-related risks and opportunities
- ▶ Checking the Report to understand how BHP's identified material climate-related risks and opportunities are reflected in the qualitative disclosures
- ▶ Evaluating the suitability of the Criteria and that the Criteria have been applied appropriately to the Subject Matter
- ▶ Checked if the assumptions and approach supporting BHP's scenario analysis and portfolio assessment were consistent with the principles specified in the criteria
- ▶ Undertaking analytical procedures of the Metrics disclosed in the Report
- ▶ On a sample basis, based on our professional judgement, agreeing claims and metrics to source information to check the accuracy and completeness of the claims
- ▶ Identifying and testing the reasonableness of assumptions and approach supporting BHP's climate scenarios.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

**Other Matters**

We have not performed assurance procedures in respect of any information relating to prior reporting periods, including those presented in the Report. Our review does not extend to any disclosures or assertions made by BHP that do not relate to the TCFD Recommendations or BHP's scenario and portfolio analysis.

While we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

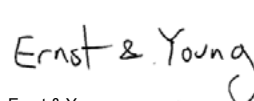
**Limited Assurance**

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance.

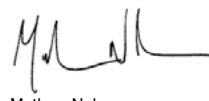
**Use of our Assurance Statement**

We disclaim any assumption of responsibility for any reliance on this assurance report to any persons other than management and the Directors of BHP, or for any purpose other than that for which it was prepared.

Our review included web-based information that was available via web links as of the date of this statement. We provide no assurance over changes to the content of this web-based information after the date of this assurance statement.



Ernst & Young  
Melbourne, Australia  
28 August 2020



Mathew Nelson  
Partner

## Glossary

### 1.5°C world

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. In this Report, we discuss modelling of a possible GHG emissions trajectory to 2100 that limits global warming to 1.5°C above pre-industrial levels. We refer to a '1.5°C world' as the 2050 point on this trajectory.

### Activity data

A quantitative measure of a level of activity that results in greenhouse gas emissions. Activity data is multiplied by an energy factor and/or an emission factor to derive the energy consumption and greenhouse gas emissions associated with a process or an operation. Examples of activity data include kilowatt-hours of electricity used, quantity of fuel used, output of a process, hours equipment is operated, distance travelled and floor area of a building.

### Assets

Assets are a set of one or more geographically proximate operations (including open-cut mines, underground mines, and onshore and offshore oil and gas production and production facilities). Assets include our operated and non-operated assets.

### bcf

Billion cubic feet.

### BECCS

Bioenergy carbon capture and storage.

### BHP

Both companies in the DLC structure, being BHP Group Limited and BHP Group Plc and their respective subsidiaries.

### BHP Group Limited

BHP Group Limited and its subsidiaries.

### BHP Group Plc

BHP Group Plc and its subsidiaries.

### BMA

BHP Mitsubishi Alliance.

### BMC

BHP Mitsui Coal.

### Board

The Board of Directors of BHP.

### CAGR

Compound annual growth rate.

### Capital goods

Final goods that have an extended life and are used by the company to manufacture a product, provide a service, or sell, store, and deliver merchandise. In financial accounting, capital goods are treated as fixed assets or plant, property and equipment (PP&E). Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles.

### CCB

Climate, Community and Biodiversity.

### CCUS

Carbon capture, utilisation and storage and/or carbon capture and storage.

### CDP

Cash and Deferred Plan.

### CO<sub>2</sub> equivalent (CO<sub>2</sub>e)

The universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.

### Commercial

Our Commercial function optimises value creation and minimises costs across our end-to-end supply chain. It is organised around our core value chain activities – Sales and Marketing; Maritime and Supply Chain Excellence; Procurement; and Warehousing Inventory and Logistics and Property – supported by short and long-term market insights, strategy and planning activities, and close partnership with our operated assets.

### Company

BHP Group Limited, BHP Group Plc and their respective subsidiaries.

### Continuing operations

Assets/operations/entities that are owned and/or operated by BHP, excluding major assets/operations/entities classified as Discontinued Operations.

### Copper cathode

Electrolytically refined copper that has been deposited on the cathode of an electrolytic bath of acidified copper sulphate solution. The refined copper may also be produced through leaching and electrowinning.

### DAC

Direct air capture.

### Discontinued operations

Major assets/operations/entities that have either been disposed of or are classified as held for sale in accordance with IFRS 5/AASB 5 *Non-current Assets Held for Sale and Discontinued Operations*.

### DLC

Dual listed company.

### Downstream emissions

Indirect GHG emissions from sold goods and services. Downstream emissions also include emissions from products that are distributed but not sold (i.e. without receiving payment).

### DRI

Direct reduced iron.

### ELT (Executive Leadership Team)

The Executive Leadership Team directly reports to the Chief Executive Officer and is responsible for the day-to-day management of BHP and leading the delivery of our strategic objectives.

### Emissions factor

A factor that converts activity data into greenhouse gas emissions data (e.g. kg CO<sub>2</sub>-e emitted per GJ of fuel consumed, kg CO<sub>2</sub>-e emitted per kWh of electricity used).

### Energy

Energy means all forms of energy products where 'energy products' means combustible fuels, heat, renewable energy, electricity, or any other form of energy from operations that are owned or controlled by BHP. The primary sources of energy consumption come from fuel consumed by haul trucks at our operated assets, as well as purchased electricity used at our operated assets.

### Energy content factor

The energy content of a fuel is an inherent chemical property that is a function of the number and types of chemical bonds in the fuel.

### Energy coal

Used as a fuel source in electrical power generation, cement manufacture and various industrial applications. Energy coal may also be referred to as steaming or thermal coal.

### Equity share approach

A consolidation approach whereby a company accounts for greenhouse gas emissions from operations according to its share of equity in the operation. The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation. Also see the definition for 'Operational control approach'.

### EVs

Electric vehicles.

### Firming capacity

Gas-fired generation or energy storage systems (batteries or pumped hydro) can be used to 'firm up' the variable, intermittent power output from a renewable power generation plant, such as wind or solar.

### Financial control approach

A consolidation approach whereby a company reports GHG emissions based on the accounting treatment in the company's consolidated financial statements, as follows:

- 100% for operations accounted for as subsidiaries, regardless of equity interest owned; and
- for operations accounted for as a joint operation, the company's interest in the operation.

It does not report GHG emissions from operations which are accounted for using the equity method in the company's financial statements.

## **FPSOs**

Floating Production and Storage Offtake.

## **Functions**

Functions operate along global reporting lines to provide support to all areas of the organisation. Functions have specific accountabilities and deep expertise in areas such as finance, legal, governance, technology, human resources, corporate affairs, health, safety and community.

## **Fugitive emissions**

Emissions that are not physically controlled but result from the intentional or unintentional releases of GHGs.

## **GDP**

Gross domestic product.

## **GHG (Greenhouse gas)**

For BHP reporting purposes, these are the aggregate anthropogenic carbon dioxide equivalent emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>).

## **GWP (Global warming potential)**

A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given greenhouse gas relative to one unit of CO<sub>2</sub>. BHP currently uses GWP from the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 4 (AR4) based on 100-year timeframe.

## **Grid**

A system of power transmission and distribution (T&D) lines under the control of a coordinating entity or 'grid operator,' which transfers electrical energy generated by power plants to energy users—also called a 'power grid.'

## **Group**

BHP Group Limited, BHP Group Plc and their respective subsidiaries.

## **Gt**

Gigatonne.

## **GtCO<sub>2</sub>e**

Gigatonne carbon dioxide equivalent.

## **HPIF**

High Potential Injury Frequency.

## **HSEC**

Health, Safety, Environment and Community.

## **IAA**

Internal Audit and Advisory.

## **ICE**

Internal combustion engine.

## **IFC**

International Finance Corporation.

## **IMO**

International Maritime Organisation.

## **IPCC**

Intergovernmental Panel on Climate Change.

## **ktpa**

kilotonne per annum.

## **KPIs**

Key performance indicators.

## **KRIs**

Key risk indicators.

## **LET**

Low emissions technology.

## **LNG (liquefied natural gas)**

Consists largely of methane that has been liquefied through chilling and pressurisation. One tonne of LNG is approximately equivalent to 46,000 cubic feet of natural gas.

## **Location-based reporting**

Scope 2 greenhouse gas emissions based on average energy generation emission factors for defined geographic locations, including local, subnational, or national boundaries (i.e. grid factors). In the case of a direct line transfer, the location-based emissions are equivalent to the market-based emissions.

## **Long-term**

Long-term goal is set for 2050.

## **Market-based method (for reporting)**

Scope 2 greenhouse gas emissions based on the generators (and therefore the generation fuel mix from which the reporter contractually purchases electricity and/or is directly provided electricity via a direct line transfer).

## **Medium-term**

Medium-term target is set for FY2030.

## **Metallurgical coal**

A broader term than coking coal, which includes all coals used in steelmaking, such as coal used for the pulverised coal injection process.

## **Minerals Americas**

A group of assets located in Brazil, Canada, Chile, Colombia, Peru and the United States (see 'Asset groups') focusing on copper, zinc, iron ore, energy coal and potash.

## **Minerals Australia**

A group of assets located in Australia (see 'Asset groups'). Minerals Australia includes operations in Western Australia, Queensland, New South Wales and South Australia, focusing on iron ore, copper, metallurgical, and energy coal and nickel.

## **MMboe**

Million barrels of oil equivalent.

## **Mt**

Million tonnes.

## **Mtpa**

Million tonnes per annum.

## **NDCs**

Nationally Determined Contributions.

## **NET**

Negative emissions technology.

## **NO<sub>x</sub>**

Nitrogen oxides.

## **OIF**

Occupational Illness Frequency.

## **Onshore US**

BHP's former petroleum asset in four US shale areas (Eagle Ford, Permian, Haynesville and Fayetteville), where we produced oil, condensate, gas and natural gas liquids.

## **Operational boundaries**

The boundaries that determine the direct and indirect emissions associated with operations owned or controlled by the reporting company.

## **Operational control approach**

A consolidation approach whereby a company accounts for 100 per cent of the greenhouse gas emissions over which it has operational control (a company is considered to have operational control over an operation if it or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation). It does not account for greenhouse gas emissions from operations in which it owns an interest but does not have operational control. Also see the definition for 'Equity share approach'.

## **Operations**

Open-cut mines, underground mines, onshore and offshore oil and gas production and processing facilities.

## **P2NZ**

Pathway to next zero (emissions).

## **Paris Agreement**

The Paris Agreement is an agreement between countries under the United Nations Framework Convention on Climate Change (UNFCCC) to strengthen efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries.

## **Paris Agreement goals**

The central objective of the Paris Agreement is its long-term temperature goal to hold global average temperature increase to well below 2°C above preindustrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

### Paris-aligned

Aligned to the Paris Agreement goals.

### Power purchase agreement (PPA)

A type of contract that allows a consumer, typically large industrial or commercial entities, to form an agreement with a specific energy generating unit. The contract itself specifies the commercial terms including delivery, price, payment, etc. In many markets, these contracts secure a long-term stream of revenue for an energy project. In order for the consumer to say they are buying the electricity of the specific generator, attributes shall be contractually transferred to the consumer with the electricity.

### PCI

Pulverised coal injection.

### Primary data

Data from specific activities within a company's value chain.

### Process

A set of interrelated or interacting activities that transforms or transports a product.

### Proxy data

Data from a similar process or activity that is used as a stand-in for the given process or activity without being customized to be more representative of the given process or activity.

### RAC

Risk and Audit Committee of the Board.

### Residual mix

The mix of energy generation resources and associated attributes such as greenhouse gas emissions in a defined geographic boundary left after contractual instruments have been claimed/retired/cancelled. The residual mix can provide an emission factor for companies without contractual instruments to use in a market-based method calculation. A residual mix is currently unavailable to account for voluntary purchases and this may result in double counting between electricity consumers.

### Scope 1 greenhouse gas emissions

Scope 1 greenhouse gas emissions are direct emissions from operations that are owned or controlled by BHP, primarily emissions from fuel consumed by haul trucks at our operated assets, as well as fugitive methane emissions from coal mining and petroleum production at our operated assets. Scope 1 refers to direct greenhouse gas emissions from operated assets.

### Scope 2 greenhouse gas emissions

Scope 2 greenhouse gas emissions are indirect emissions from the generation of purchased or acquired electricity, steam, heat or cooling that is consumed by operations that are owned or controlled by BHP. Our Scope 2 emissions have been calculated using the market-based method using supplier specific emission factors unless otherwise specified.

### Scope 3 greenhouse gas emissions

Scope 3 greenhouse gas emissions are all other indirect emissions (not included in Scope 2) that occur in BHP's value chain, primarily emissions resulting from our customers using the fossil fuel commodities and processing the non-fossil fuel commodities we sell, as well as upstream emissions associated with the extraction, production and transportation of the goods, services, fuels and energy we purchase for use at our operations; emissions resulting from the transportation and distribution of our products; and operational emissions (on an equity basis) from our non-operated joint ventures.

### Short-term

Short-term target is set for FY2022.

### SO<sub>x</sub>

Sulphur oxides.

### SSP

Shared socioeconomic pathways.

### TCFD

Task Force on Climate-related Financial Disclosures.

### TPED

Total primary energy demand.

### TRIF

Total Recordable Injury Frequency

### TGR

Top gas recycling.

### TWh

Terawatt per hour.

### Value chain

Refers to all of the upstream and downstream activities associated with the operations of the reporting company, including the use of sold products by consumers and the end-of-life treatment of sold products after consumer use.

### VCUs

Verified carbon units.

### WAIO

Western Australia Iron Ore.

## Corporate directory

### BHP Registered Offices

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#### Group General Counsel & Company

##### Secretary

Caroline Cox

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[web.queries@computershare.co.za](mailto:web.queries@computershare.co.za)  
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should contact their CSDP or stockbroker.

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Website: [citi.com/dr](http://citi.com/dr)

## How to access information on BHP

BHP produces a range of publications, which are available to download at [bhp.com](http://bhp.com). If you are a shareholder, you can also elect to receive a paper copy of the Annual Report through one of the Share Registrars listed above.

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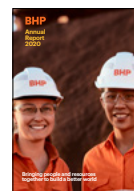
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Annual Report  
2020



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Report 2020

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