



Energising
today



Advancing
tomorrow

Energising today:

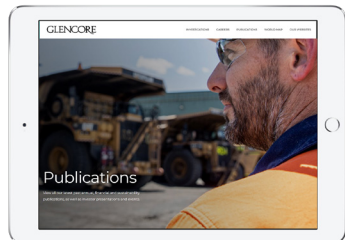
As the world moves towards a low-carbon economy, we are focused on supporting the energy needs of today whilst investing in our transition metals portfolio.



Read more about how we allocate capital to prioritise transition metals: [p37](#)

Our Purpose

Responsibly sourcing the commodities that advance everyday life.



Explore our Climate Report online at: www.glencore.com

Advancing tomorrow:

The world of tomorrow will look very different, with new sources of energy and ever greater levels of connectivity. The metals we produce, source and market will support the global ambition to decarbonise.

Strategic approach

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Important notice

This document has been prepared to provide our investors and potential investors with information on our progress against our 2020 climate change strategy, Pathway to Net Zero.

This document has not been prepared as financial or investment advice or to provide any guidance in relation to our future performance. It should be read as a whole, and in conjunction with our periodic reporting and other announcements (including, without limitation, regulatory announcements made in connection with our listings on the London Stock Exchange and Johannesburg Stock Exchange).

Glencore operates in a dynamic and uncertain market and external environment. Plans and strategies can and must adapt in response to dynamic market conditions, joint venture decisions, new opportunities that might arise or other changing circumstances. Investors should not assume that our strategy on climate change will not evolve and be updated as time passes. Additionally, a number of aspects of our strategy involve developments or workstreams that are complex and may be delayed, more costly than anticipated or unsuccessful for many reasons, including (without limitation) reasons that are outside of Glencore's control.

There are inherent limitations to scenario analysis and it is difficult to predict which, if any, of the scenarios might eventuate. Scenario analysis relies on assumptions that may or may not be, or prove to be, correct and that may or may not eventuate and scenarios may also be impacted by additional factors to the assumptions disclosed. Given these limitations we treat these scenarios as one of several inputs that we consider in our climate strategy.

Due to the inherent uncertainty and limitations in measuring greenhouse gas (GHG) emissions and operational energy consumption under the calculation methodologies used in the preparation of such data, all CO₂e emissions and operational energy consumption data or volume references (including, without limitation, ratios and/or percentages) in this document are estimates. There may also be differences in the manner that third parties calculate or report such data compared to Glencore, which means that third-party data may not be comparable to Glencore's data. For information on how we calculate our emissions and operational energy consumption data, see our latest *Basis of Reporting 2022*, *Climate Report* and *Extended ESG Data*, which can be found on our website.

Please also refer to the important notice concerning this report, including in relation to forward-looking statements, on page 78.

Note on 'our emissions'

'Glencore's emissions' or 'our emissions' means CO₂e emissions from our industrial assets (including Scope 1, 2, and 3) which is defined by reference to operational control save for certain emissions relating to our equity share in certain independently managed joint ventures, as set out in the About this report section, in *Appendix two: Performance data* and in the *Basis of Reporting 2022*. Where 'industrial' is used before 'emissions', this is for additional clarity, and the underlying meaning is the same irrespective of whether this is included.

Throughout this report, where we refer to our aim and/or efforts to achieve 'net zero emissions' we are referring to a net zero ambition in relation to our emissions.

Our 2020 climate strategy focuses on our industrial emissions because we consider these emissions to be the most relevant emissions for the diversified mining sector, given that they arise from (or are direct consequences of) our own natural resources production.

Scope 3 emissions associated with third-party volumes traded by our marketing business are not included in our emissions reporting and targets because, in our view, those trading activities do not result in the generation of additional Scope 3 emissions associated with the transformation or consumption of the product. The trading of these volumes may give rise to additional emissions associated with the transportation and handling of these products and these emissions have been included in our strategy. We continue to strengthen the accuracy of our reporting of these emissions.

Performance highlights 2022

Enhanced disclosures

Enhanced disclosures based on feedback received from an extensive consultation with shareholders following the vote on our 2021 Climate Progress Report.

Aligning our capital expenditure

Continued alignment of our material capital expenditure and investments with the goals of the Paris Agreement and our own climate commitments. In 2022, around 75% of our capital expenditure was on sustaining and expanding our metals operations, with 25% used to our energy portfolio as it is responsibly managed down over time.

Restating our 2019 baseline

Restated our 2019 baseline for our emissions (Scope 1, 2 and 3 emissions, market based) from 374 to 508 million tonnes of CO₂e to reflect acquisitions and divestments and other changes to the scope of reporting to enhance clarity and consistency.

Understanding our products' carbon footprints

Participated in efforts to understand our commodities' CO₂e emission. In 2022, we contributed to the development of the Global Battery Alliance's Battery Passport, which provides a framework for collecting and reporting on certain ESG data. We also provided input into GBA's 'rulebook' for the GHG footprint and participated in its battery passport pilot.

A non-linear transition

We believe that the global energy transition will be non-linear through time and geography and may create significant challenges for stakeholders in our value chain. We have developed an initial set of principles that will inform our approach to a Just Transition. These build on our existing commitments and practices around closure planning and social and environmental management.

Abating Scope 1 and 2 emissions

Identified a total of 4.4Mt of CO₂ in potential Scope 1 abatement opportunities and 9.9 Mt of CO₂ in potential Scope 2 abatement opportunities, as represented on the 2035 Marginal Abatement Cost Curve.

Supporting uptake and integration of abatement

Continued to progress our wholly-owned Carbon Transport and Storage Company (CTSCo) Project, which aims to demonstrate carbon capture from a power station and the sustainable storage of the captured CO₂ in the Surat Basin in Queensland, Australia. Studying the potential use of a relatively small portion of the Wandoan coal resource (up to 4 million tonnes per annum) as a feedstock to produce blue hydrogen and ammonia, with the intention to capture approximately 90% of CO₂e emissions from this process and permanently store them deep underground using CCS technology.

Transparency on our advocacy activities

Disclosed our direct advocacy linked to climate-related topics and conducted our annual review of the positions and activities of the industry organisations to which we belong.

Our performance highlights 2022

Scope 1 emissions (CO₂e million tonnes)

16.6

2021: 15.9 (rebased from 15.0)



Scope 2 location-based emissions (CO₂e million tonnes)

10.4

2021: 10.4 (rebased from 10.8)



Scope 2 market-based emissions (CO₂e million tonnes)

11.4

2021: 11.4 (rebased from 11.1)



Total energy use (petajoules)

193

2021: 186 (rebased from 178)



Scope 3 emissions (CO₂e million tonnes)

342

2021: 365 (rebased from 254)



Chairman's statement

I am proud of the progress we are making in delivering our climate commitments



Kalidas Madhavpeddi
Chairman

When I became Chairman in 2021, Glencore had already established a strong strategic approach towards managing its emissions and implementing initiatives that would support the delivery of the goals of the Paris Agreement and had launched its climate strategy with strong investor support. The Company has continued to respond actively to the challenges of climate change and to take actions to deliver on its strategy.

Given the importance of climate strategy to the company, the Board is responsible for overseeing the Group's climate strategy and progress on implementation of our strategy is a standing item on the Board agenda, and is discussed in Board meetings at least twice yearly. During Board meetings, we discuss the Group's progress on delivering our climate strategy, consider the steps that the Group may need to take to address risks and challenges and how best to leverage opportunities.

We receive regular updates from our CEO, Gary Nagle, as chair of our Climate Change Taskforce. We use this information and consider climate issues when reviewing strategic decisions, including those relating to major capital expenditure and acquisitions and divestments with the potential to affect our emissions profile across Scope 1, 2 and 3 emissions.

Board members receive annual training on a range of climate change matters. These have included our duties as directors, legal risks, external expectations and evolving climate issues. This training has emphasised the importance of effective integration of climate change into the Group's risk management processes and related Board oversight.

In 2022, I have actively engaged with our shareholders and interested stakeholders on climate change. At our 2022 Annual General Meeting, we had our second shareholder advisory vote on the progress against our three-yearly climate action transition plan. In response to the results of this vote, along with Gary, I undertook an active engagement programme to understand better our shareholders' views on our climate strategy.

The Board and I considered the feedback received from the shareholder consultation process and discussed and approved the steps the Group should take to respond to these issues. We have set out the key points raised during our discussions with shareholders on climate change and how we are responding on page 49.

I am proud of the progress we are making in delivering our climate commitments and believe our holistic approach to supporting the global transition to a low-carbon economy.

A handwritten signature in black ink, appearing to read 'Kalidas Madhavpeddi'. The signature is fluid and cursive, with a small dot at the end.

Kalidas Madhavpeddi,
Chairman

23 March 2023

Chief Executive statement

The energy transition presents exciting opportunities for our business



Gary Nagle
Chief Executive Officer

As one of the world's largest globally diversified natural resource companies, we combine the knowledge generated by our marketing business with the production strength of our industrial assets, positioning the Group to support the journey to a low carbon economy through responding to the world's commodity needs today and in the future.

Towards the end of 2021, we began to see a rally in commodity prices in response to the global economic recovery from the Covid-induced industrial slowdown. During 2022, we saw prices responding to years of underinvestment in the development of energy and base metals resources and stocks at low levels, as well as being impacted by the war in Ukraine. While there is a growing global demand for commodities to meet today's energy needs and decarbonisation, across our sector relatively limited investment is being made in new production.

Russia's invasion of Ukraine generated one of the largest dislocations in global energy markets in recent history. The legacy of general sector underinvestment, along with high rates of mine disruption in Australia, Indonesia and Colombia, left supply unable to easily respond to the stronger demand brought on by the rapid changes in Europe's energy mix. Moreover, continued geopolitical uncertainty has heightened energy security vulnerabilities and, while some jurisdictions are seeking to accelerate renewables uptake, the associated short- to medium-term impacts may delay the pace of the non-linear transition away from fossil fuels in certain other regions.

While these unprecedented 2022 developments in global energy markets were material drivers for our marketing and industrial businesses which both delivered record performance, as global energy markets normalise, we expect our performance to do likewise. At the same time, in response to the growing demand for commodities, we are directing the majority of our capital expenditure, which is partly funded through the earnings of our energy business, to fund the development of our transition metals portfolio. In 2022, approximately 75% of our capital expenditure was on sustaining and expanding our metals operations, with 25% of capital deployed to our energy portfolio as it is being responsibly managed down over time in line with our emissions reduction targets and ambition.

We recognise that the current rate of developing mining projects worldwide is unlikely to meet the demand that the transition will create. We believe that we are well placed to participate in bridging this gap in supply through the flexibility that exists in our business to respond to global needs. We are supportive of a circular economy and believe our recycling business can over time play a growing role in helping to meet global commodity needs.

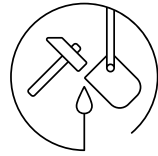
Chief Executive statement *continued*

We have already closed three coal mines since 2019, and plan to close three coal mines in the near term and at least six additional mines by the end of 2035 as they come to the end of their economic lives or lease expiry dates, reducing overall coal production and associated emissions across our portfolio. In addition, we may exit from other industrial assets should they become uneconomic due to high carbon and energy costs. For industrial assets that we are closing, we plan to undertake responsible closures that involve engagement and collaboration with affected stakeholders.

In November 2022, COP27 took place in Sharm el-Sheikh in Egypt with participants focused on the global approach to adapting to the effects of climate change. One of the outcomes was a recognition of the need for a 'just transition' for all those affected by the transition.

We believe that the global energy and carbon transition will be non-linear and may create significant challenges for our workers, the suppliers in our value chain and for the wider communities in which we operate. As such, we need to develop locally appropriate responses and plans.

We have commenced developing Just Transition principles that are aligned with our company Values and a risk and opportunity assessment to help us design a framework with the flexibility for locally appropriate action. We are also developing guidance to support our industrial assets in planning and identifying potential levers to mitigate risks or enhance the benefits of the energy transition for our affected stakeholders.



Short term target: by the end of 2026

15%

Medium term target: by the end of 2035

50%

reductions in our Scope 1, 2 and 3 emissions from a 2019 baseline



We recognise that climate change is a material issue that can affect our business through regulations to reduce emissions, carbon pricing mechanisms, acute climatic events or chronic changes to the climate, access to capital, permitting risks and fluctuating energy costs, as well as changing demand for the commodities we produce and market. We consider the effective and strategic management of climate change-related risks and opportunities as vital to our business.

We recognise the importance of engaging with our stakeholders and remain committed to actively meeting and discussing climate-related topics. Following the shareholder vote of over 23% against our climate progress report in April 2022, we undertook an extensive engagement programme with our shareholders to understand the issues and opportunities that they have identified for Glencore on climate. Our engagement with stakeholders is ongoing and will continue to inform our climate strategy.

We take note of the resolution submitted by a group of shareholders, seeking disclosures in relation to our climate strategy. We are reviewing the resolution and engaging with our shareholders.

The energy transition, while complex and challenging for all, presents exciting opportunities for our business. We believe that our approach to managing our emissions' footprint sets us apart from our peers and I am proud to share the progress we have made during 2022.

Gary Nagle,
Chief Executive Officer

23 March 2023

Our Climate Action Transition Plan

As one of the world's largest diversified natural resource companies, we have a key role to play in the global transition to a low carbon economy.

Our first Climate Action Transition Plan, *Pathway to Net Zero*, was published on 4 December 2020, and received 96.4% support when put to an advisory shareholder vote at our 2021 AGM. Progress against our Transition Plan is published and put to an advisory vote annually. We have committed to review and produce an updated transition plan every three years, and accordingly, will assess our climate strategy during 2023.

Our position on climate change

We recognise climate change science as set out by the United Nations Intergovernmental Panel on Climate Change (IPCC). We support the global climate change goals outlined in the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, the ultimate objective of which is to stabilise GHG concentrations at a level that would significantly reduce the risks and impacts of climate change. Under the Paris Agreement (Article 2, UNFCCC), this is described as keeping the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

We believe that only through collective inclusive action can the world achieve the goals of the Paris Agreement and limit the impact of climate change. The UNFCCC and the Paris Agreement (Articles 2, 3(3) and 3(4), UNFCCC) provide that efforts to stabilise GHG concentrations should also enable economic development to proceed in a sustainable manner.

We support the UNFCCC's recognition of the critical importance of sustainable economic development and its acknowledgement that measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each country and integrated with national development programmes.

We support the principle of equity set out in the Paris Agreement and acknowledge the common but differentiated responsibilities and capabilities of domestic economies (particularly those of emerging markets and developing economies) in the pursuit of climate objectives.

We draw from this principle that the global response to climate change should pursue twin objectives: limiting temperatures in line with the goals of the Paris Agreement (Article 2(1)(a)), and supporting the United Nations Sustainable Development Goals, including sustained, inclusive and sustainable economic growth, and universal access to clean, affordable energy.

The world requires a global transformation of energy, industrial and land-use systems to achieve these goals. We believe this transition is a key part of the global response to managing energy security and the increasing risks posed by climate change.

In response to the ongoing decarbonisation of energy and the electrification of key sectors, including mobility and its associated infrastructure, we expect demand to grow exponentially for renewable energy technologies, and the metals and minerals required to build them.

Our business enables us to support the delivery of these goals by producing, recycling, marketing and supplying transition metals and minerals that are essential to the shift to a low-carbon economy and to meeting the needs of everyday life.

As noted in the *Reducing Scope 3 emissions* section, coal's share of primary energy demand will decline over time, but for many countries it continues to drive economic and social development¹. Our energy portfolio, including coal, helps provide the products needed to meet the energy and development needs of today.

We are committed to responsibly managing the decline of this portfolio in line with our Scope 1, 2 and 3 emissions reduction targets, a 15% reduction by the end of 2026 and a 50% reduction by the end of 2035 against a 2019 baseline, which has been restated as set out in detail on pages 71 to 77, with a longer-term ambition of achieving net zero emissions by the end of 2050. We are working actively towards achieving our targets and ambition, and have established seven actions with which we are aiming to do so - these actions are set out on the following page.

We recognise the need for action. Our focus remains on our emissions' footprint, including our Scope 3 emissions. We have linked our capital allocation strategy for our industrial business to the achievement of our short- and medium-term climate targets and our ambition of achieving net zero emissions by the end of 2050. Details of our capital allocation strategy are available on page 37.

Today there are numerous industrial processes for which carbon reduction solutions do not exist or are prohibitively expensive. We recognise that to achieve our long-term ambition there is a need for significant global technological evolution and advancement, and coordinated and supportive government policies, including incentives to drive accelerated uptake of lower carbon and decarbonisation technologies, and market-based regulations governing industrial practices that drive a competitive, least cost emissions reduction approach, most of which are not within our direct control or ability to materially influence. Our long term ambition is therefore subject to such a supportive policy environment and, for that reason, we have expressed it as an ambition rather than a target, which is more appropriate for activities and actions deemed within our direct control.

¹ International Energy Agency World Energy Outlook 2022 Chapter 5 "Outlook for energy demand" available at <https://www.iea.org/reports/world-energy-outlook-2022>; and International Energy Agency Coal available at <https://www.iea.org/fuels-and-technologies/coal>.

Our Climate Action Transition Plan *continued*

We aim to achieve net zero emissions through seven core actions:

Managing our footprint



Footprint

Managing our operational footprint

Reducing our Scope 1 and 2 emissions



Reduction

Reducing our Scope 3 emissions

Our commitment to a direct reduction of our scope 3 emissions in particular through responsible closure of assets in our energy portfolio will contribute to reducing global emissions.



Capital

Allocating capital to prioritise transition metals

Investing in the metals that the world needs

Contributing to global decarbonisation



Partnership

Collaborating with our value chains

Working in partnership with our customers and supply chain to enable greater use of low-carbon metals and support progress towards technological solutions to address climate change



Abatement

Supporting uptake and integration of abatement

An essential contributor to achieving low or net zero carbon objectives



Technology

Utilising technology to improve resource use efficiency

Contributing to the circular economy



Transparency

Transparent approach

Reporting on our progress and performance

Our targets and ambition

We take a holistic approach to carbon reduction, recognising that a meaningful contribution to addressing climate change is only possible through our Scope 1, 2 and 3 emissions reductions.

In setting our targets and ambition, we took into consideration the goals of the UNFCCC and the aims of the Paris Agreement (Article 2, UNFCCC; and Article 2, Paris Agreement). Our targets and ambition cover our emissions as set out in the *Boundaries and scope* section of this report (see *About this report* starting on page 71)². We chose to adopt an absolute reduction metric³ as this will enable us to demonstrate a specified reduction in our emissions.

We have committed to report annually on progress with our targets and ambition. We obtain external verification on our performance for specific key performance indicators (KPIs), and report in alignment with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Following the expiry of our 2017 emissions reduction target of 5% industrial assets' Scope 1 and Scope 2 emissions reduction intensity versus 2016 levels by 2020, we published our climate strategy, *Pathway to Net Zero* in late 2020.

Our 2020 climate strategy set out our decarbonisation approach to achieving our climate-related targets and longer-term net-zero ambition. In 2021, along with our acquisition of Cerrejón, we announced an increase to our 2035 target and introduced an interim target for 2026.

Our targets relate to our CO₂e emissions footprint.

Our industrial portfolio profile provides the flexibility to decarbonise our emissions footprint

Short-term target: 15% reduction in total CO₂e emissions against a 2019 baseline by the end of 2026

Medium-term target: 50% reduction in CO₂e emissions against a 2019 baseline by the end of 2035

Long-term ambition: to achieve, with a supportive policy environment, net zero CO₂e emissions by the end of 2050

Our targets and ambition go beyond the International Council on Mining and Metals' (ICMM) collective commitments set out in October 2021.

Glencore does not have a science-based target as defined by the Science Based Targets Initiative (SBTi). The SBTi methodologies are not applicable for diversified commodity companies as they rely on intensity measures that are too complex to be applied to diversified, cross commodity companies.

The SBTi's methodology works on a single commodity or a single business line but is not applicable for multi-product businesses. In addition, SBTi's policy⁴ on fossil fuel companies fully excludes all companies with any level of direct involvement in exploration, extraction, mining and/or production of oil, natural gas, coal or other fossil fuels. Full details are set out in the *About this report* section, starting on page 71.

² For 2022, we have implemented a change in our organisational boundaries. For further details, refer to the *Boundaries and scope* section in the *About this report* section.

³ Absolute reduction refers to the total quantity of emissions emitted, whereas intensity compares GHG impact per unit of physical activity or unit of economic value.

⁴ <https://sciencebasedtargets.org/sectors/oil-and-gas#what-is-the-sb-tis-policy-on-fossil-fuel-companies>

Our targets and ambitions *continued*

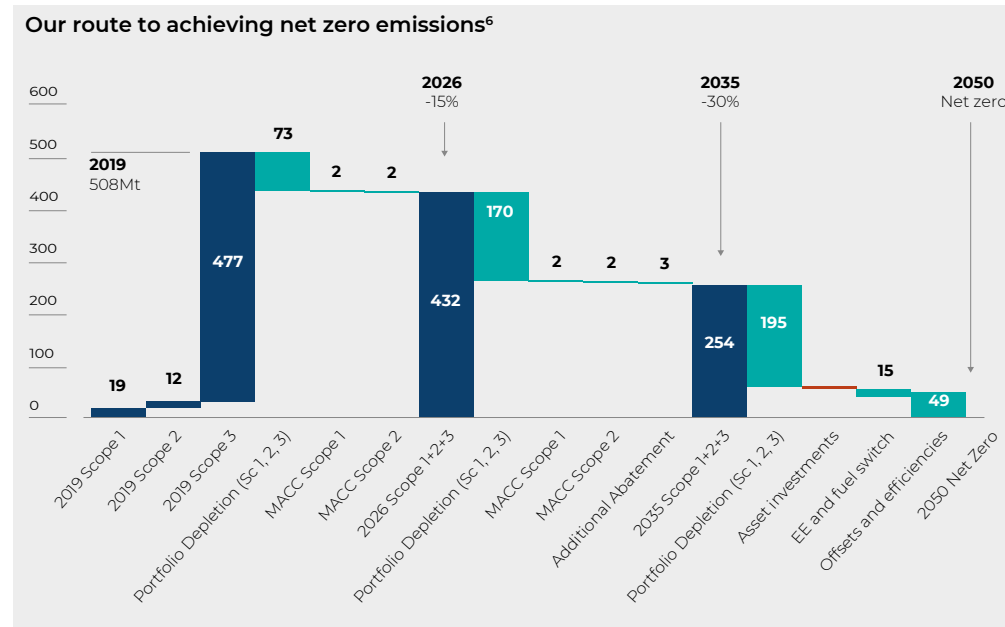
Achieving our targets and ambition

Our Scope 1, 2 and 3 emissions' reduction approach sets out how we plan to achieve our short- and medium-term targets and long-term ambition⁵.

The graphic includes adjustments to our 2019 baseline for acquisitions and disposals, the most significant being the acquisition of Cerrejón and Astron and the revised organisational boundary which principally affects coal Scope 3 emissions. Full details are set out in the *About this report* section starting on page 71.

Owing to the nature of the assets we operate, we do not anticipate our annual emissions reductions to progress in a linear fashion. While changes in production may result in year-on-year variations of our emissions, we are committed to managing our operations to deliver our emissions reduction targets.

The table summarises our emissions performance for 2019 to 2022. For additional information, refer to *Appendix two: Performance data* starting on page 59.



⁵ Subject to a supportive policy environment, and compared to our restated 2019 baseline.

⁶ The components contributing to our emissions reductions are indicative and may change based on actual performance.

⁷ Sum of Scope 3 emissions reported in categories 1, 3c, 4, 10, 11 and 15

The below table summarises our emissions performance for 2019 to 2022

Indicator	2019	2020	2021	2022	Change 2022 v 2019
Scope 1 - Direct emissions (Mt CO ₂ e)	19.0	15.2	15.9	16.6	-12.7%
Scope 2 - Indirect market-based emissions (Mt CO ₂ e)	12.2	10.0	11.4	11.4	-6.1%
Scope 3 ⁷ - Indirect emissions (Mt CO ₂ e)	476.7	354.2	364.7	342.1	-28.2%
Total (Mt CO ₂ e)	507.9	379.5	392.0	370.1	-27.1%

Our targets and ambitions *continued*

Comparison with IEA 2022 Net Zero Emissions (NZE) 1.5-degree CO₂ emission pathways and the IPCC’s Special Report on Global Warming of 1.5 °C (SR1.5)’s “no or limited overshoot 1.5 degrees CO₂ emissions” pathway

The change in CO₂e emissions, illustrated by the graph, demonstrates the percentage changes in global CO₂ emissions from fossil fuel combustion and industrial processes since 2010 and through 2022, based on data reported by the IEA.

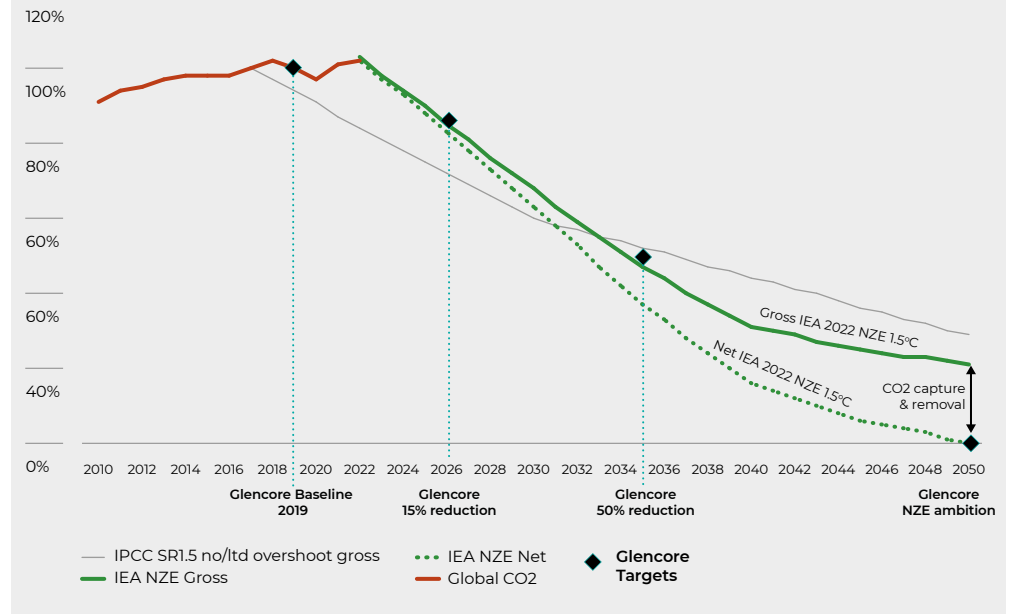
Future changes in CO₂ emissions based on the IEA’s 2022 World Energy Outlook NZE scenario⁸ are shown for both the gross and net emissions pathways, with the difference reflecting the volume of CO₂ the IEA indicates is required to be captured or removed from industrial processes and stored permanently. For comparison, the IPCC’s Special Report on Global Warming of 1.5 °C (SR1.5), “no or limited overshoot 1.5 degrees CO₂ emissions” pathway is also shown; the last included data emissions point was 2017. There is some correlation between the IEA and IPCC emissions levels in 2035, however, due to increased global emissions since 2017, the IEA’s latest NZE pathway requires reduced emissions beyond 2035 to balance the carbon budget.

Glencore set its emissions reduction targets and ambition in 2020 against a 2019 baseline⁹. The graphic illustrates our targets and ambition. Our 2026 target coincides with the IEA’s NZE gross pathway and our 2035 target of a 50% reduction in our emissions based on a 2019 baseline approximates the 53% reduction (versus 2019) estimated by the IEA’s NZE gross emissions pathway.

⁸ IEA’s 2022 World Energy Outlook NZE scenario: This is one of the three scenarios which the International Energy Agency explores in the 2022 World Energy Outlook. The Net Zero Emissions by 2050 (NZE) Scenario maps out a way to achieve a 1.5°C stabilisation in the rise in global average temperatures, alongside universal access to modern energy by 2030 whereas the Stated Policies Scenario (STEPS) shows the trajectory implied by today’s policy settings, and the Announced Pledges Scenario (APS) assumes that all aspirational targets announced by governments are met on time and in full, including their long-term net zero and energy access goals. International Energy Agency “An updated roadmap to Net Zero Emissions by 2050” World Energy Outlook 2022 available at <https://www.iea.org/reports/world-energy-outlook-2022/an-updated-roadmap-to-net-zero-emissions-by-2050>

⁹ For 2022, we have implemented a change in our organisational boundaries, and made other acquisitions and divestments, which are reflected in our updated baseline emissions. For further details, refer to the Boundaries and scope section in the About this report section.

Change in fossil fuel CO₂ emissions



- Glencore’s targets reflect the restated 2019 baseline and unchanged reduction targets and ambition
- The IEA’s global CO₂ emissions data is as reported in the relevant World Energy Outlook publications and includes emissions from industrial processes and flaring*
- In March 2023 the IEA reported global CO₂ emissions increased by 321Mt in 2022 vs 2021**
- The IEA’s NZE emissions scenario was published in their flagship World Energy Outlook 2022 report during October 2022 with data provided at five-year intervals from 2030⁵. For illustration purposes the graphic is presented with linear interpolation between data points, with the IEA’s most recent reported value being that for 2022***
- The IPCC’s SR1.5 publication in Table 2.4 provides emissions estimates in 2030 and 2050 for CO₂ from fossil fuels and industry (gross). The graphic reflects the mean values with linear interpolation between values commencing 2017 which was the last reported value cited in the report.

* International Energy Agency, World Energy Outlook 2022, available at: <https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>

** IEA (2023), CO₂ Emissions in 2022, IEA, Paris <https://www.iea.org/reports/co2-emissions-in-2022>, License: CC BY 4.0

*** International Energy Agency, World Energy Outlook 2022, available at: <https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>

Our targets and ambitions *continued*

Restating the 2019 baseline emissions

As anticipated in previous reports, we are making a number of restatements to our 2019 baseline. Our emissions reduction targets and ambition remain unchanged in the context of these restatements.

In accordance with the GHG Protocol's standards for emissions reporting, including its guidance on adjustments to baseline emissions, significant changes to the portfolio require a restatement of our emissions¹⁰. Each of our Scope 1, 2 and 3 emissions categories have been updated to reflect our industrial asset acquisitions and divestments, see page 71.

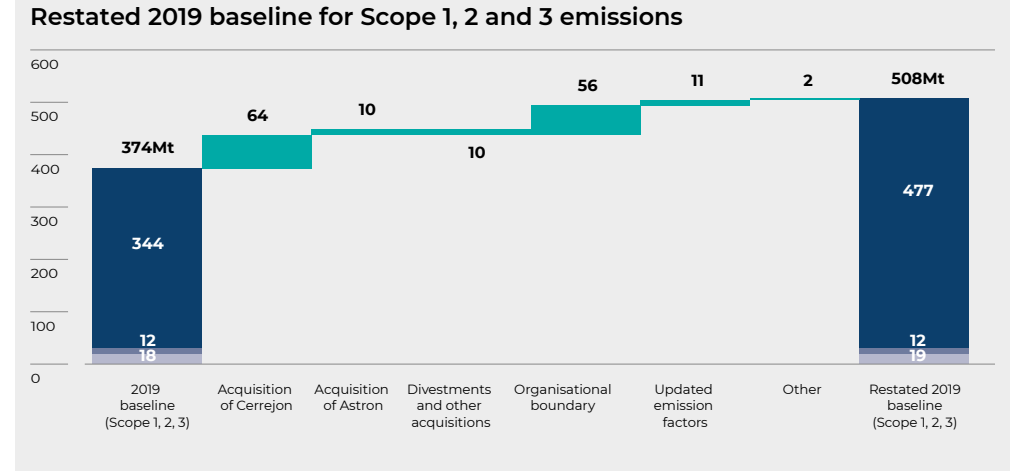
Given that we are publicly restating our 2019 baseline for acquisitions and divestments for the first time, as part of the continued evolution in our approach to Scope 3 emissions reporting, we have also taken the opportunity to make some changes to the scope of the reporting of our Scope 3 emissions, categories 10 (processing of sold products) and 11 (use of sold products), ahead of the planned review of our climate strategy during 2023. We have, accordingly, adjusted our baseline by a limited amount relative to our overall emissions profile and reallocated certain emissions across various Scope 3 categories. Further details are set out in the *About This Report* section, in particular pages 72 and 74.

Additionally, we have reviewed and updated our approach to value-chain emissions factors, and we have restated our Scope 2 baseline emissions to account for our enhanced market-based emissions intensity methodology which incorporates new contractual agreements and the improved availability of residual grid emissions data, see the *About This Report* section, in particular pages 72 and 73.

The waterfall graph illustrates the major portfolio and reporting changes to our restated 2019 baseline and 2022 reporting. A comprehensive account of our restatements is set out in the *About this report* section, starting on page 71.

¹⁰ The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), available at: <https://ghgprotocol.org/corporate-standard>

Overview of industrial asset restatements:



Just Transition

As one of the world's largest diversified natural resource companies, we have a key role to play in the global transition to a low carbon economy.

As set out in our *2020 Pathway to net zero*, the transition to a low carbon economy will affect our operations in different ways. Looking ahead, this may include:

- In some areas there will be a 'transition out' as we close energy industrial assets that are uneconomic or reach the end of their economic life; and
- In other areas there will be a 'transition in' as we focus on our operations producing the commodities required for the transition, such as copper and nickel, and ramp-up activities as our metals and recycling businesses expand to meet the demands of a low-carbon society.

We believe that this transition is unlikely to be linear through time and geography and may create significant challenges for our workers and others in our value chain and for wider communities.

The concept of Just Transition is not new and has no single definition; it has grown in importance since it was included in the Paris Agreement Preamble at the 2015 United Nations Climate Change Conference (COP21)¹¹. A Just Transition speaks to an equitable and inclusive process to navigate and address the social and economic risks and opportunities faced by a range of stakeholders that will emerge due to the global transition to a low carbon future.

Through starting to prepare for a Just Transition now, we can be better positioned to leverage new business opportunities, a reskilled workforce and greater demand for transition commodities, while working with national government Just Transition programmes.

We believe that a Just Transition will be a highly complex process; it must be dynamic with the flexibility to respond to evolving policies and socio-economic developments. Society must address the social risks and opportunities from both closure of fossil fuel assets and the corresponding expansion of production of transition metals. We are developing our approach to the Just Transition to take account of this complexity and our interdependence with other companies and the public sector.

As a mining company, closure planning is an integral part of our operational strategy and planning. Our closure planning begins at an industrial asset's design phase and is updated throughout its operational life, along with financial provisioning, incorporating the principles of adaptive management. Our industrial assets develop and maintain their closure plans to follow good practice, such as the ICMM's Integrated Mine Closure Good Practice Guide. Industrial assets develop their closure plans in consultation with local communities, to take into account their needs, and in accordance with regulatory requirements. Industrial assets also monitor the societal risks and opportunities associated with closure.

We also have a number of other workstreams in our business which are designed to meet our existing policy commitments, but also support the Just Transition. We have established workstreams to mitigate, manage, and reduce our activities' impacts on nature and natural capital. These include our membership of the Proteus Biodiversity Partnership, internal working groups of subject matter experts to enhance and share social and environmental knowledge and adopting Taskforce for Nature-related Financial Disclosures (TNFD)-aligned environmental risk processes.

We believe that our business model means we are well placed to thrive in a low carbon future – we have strong exposure to future facing minerals such as copper, cobalt, nickel and zinc, and to the circular economy through our recycling business. Through these activities, we provide access to decent jobs in many of the countries in which we operate. We are mindful of the need to consider inclusion and diversity throughout the life cycle of our operations.

We already make social investments in communities, with approximately \$90 million invested in community and social development initiatives in 2022. Where relevant, we seek to leverage these investments and our experience in skills development and energy infrastructure building to work with governments, other mining companies, related regional industries, and local communities towards a Just Transition.

We are reviewing these activities in the context of current Just Transition frameworks and using their guidance to inform our thinking. These frameworks include the World Benchmarking Alliance, Council for Inclusive Capitalism and Climate Action 100+, as well as those published by international bodies including the International Labour Organisation, International Energy Agency and the United Nations.

Our approach to Just Transition considers these frameworks and builds on our established practices, including our Group policies such as Environment, Social Performance and Human Rights and our Group Standards such as Closure Planning, Social Performance, Human Rights and IDEAL framework (Inclusion, Diversity, Equity, Advancement and Local), as well as the International Council on Mining and Metals (ICMM) Principles.

¹¹ Preamble, Paris Agreement provided "Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities".

Just Transition *continued*

While governments must lead in addressing their nations' transition to a low carbon future, businesses can play a supporting role in the Just Transition. We aim to tailor our approach considering specific national contexts, stakeholder engagement activities, and potential collaboration and partnerships, as well as domestic and inter-jurisdictional policy landscapes.

The countries we operate in face very different transition outlooks, and a successful social, environmental and economic transition is dependent on government commitment, policy and funding to address widespread and systemic challenges. For example:

- Australia has high per capita emissions today and a large coal sector. Its recent nationally determined contribution (NDC) aims to achieve a 43% reduction in emissions by 2030. Australia is presiding over a rapid acceleration towards a cleaner energy future, including through the growth of renewables and hydrogen, with significant future export potential. Key challenges include mitigating economic impacts on local communities from any structural decline in the coal industry.
- The Democratic Republic of Congo (DRC) has a significant opportunity for economic growth as demand rises for copper, cobalt and other clean energy minerals. Key challenges include the need to expand affordable, clean energy access (beyond the approximately 20% of the population with electricity supply today) and to ensure the energy transition brings fairly distributed benefits to local people.

- South Africa is an emissions-intensive country, with coal accounting for some 77% of the current energy generation. The government has pledged to reduce emissions by 30% by 2030 in its NDC, but not all of the funding required to deliver this has been committed to date. The country already faces an energy crisis in the public utilities sector with high power prices, significant load shedding and with high unemployment and social discontent; this creates a very challenging environment for the Just Transition.
- Colombia has submitted ambitious NDC targets, aiming to cut emissions by 51% by 2030, despite most domestic energy usage already produced from renewables. Coal contributes significantly to the country's exports and mining contributes around 37% of regional GDP in mining regions. A key challenge is to minimise the adverse impacts on export revenues and the economy, and to mitigate social impacts for workers and local communities as the country phases down coal production.
- Canada is a highly energy intensive country, despite a heavily renewable grid. Its NDC pledges to cut emissions by up to 45% by 2030, supported by around C\$15 billion in funding over the next five years. Clean energy minerals are set to expand through support for expansion projects and metals recycling processing. Key challenges include the positive engagement and consent of Indigenous communities for mineral expansion projects.

Reflecting the complexity surrounding the concept of the Just Transition, we are developing an approach that considers both the risks and the positive opportunities that the energy transition brings in each country where we operate. Oversight of this process sits with our Climate Change Taskforce and implementation with our commodity departments.

We have considered global stakeholder expectations and undertaken analysis of the context and challenges faced by some of our key operating countries, based on their commodity mix, government policy, and socioeconomic starting point in the transition.

Over the next year we aim to continue to progress our approach to the Just Transition, building on our existing good practices and policies. Our workplan includes:

- Undertaking pilot studies on the implications of and opportunities for the Just Transition at industrial assets with significant exposure;
- Developing Just Transition guidance, tailored by market context, which builds on the existing work that we do to guide our industrial assets in their planning;
- Identifying potential levers to mitigate risks or enhance the benefits of the energy transition for our stakeholders; and
- Consolidating our global approach and, as the transition is non-linear, developing locally appropriate commitments in relevant jurisdictions.

Our key principles for a Just Transition

We have developed an initial set of principles that will inform our approach to the Just Transition. These principles build on our existing commitments and practices around closure planning and social and environmental management, which support the Just Transition. Given the diversity of our industrial operations and local circumstances, these principles serve as a guiding framework and may not be wholly applicable in all locations.

- **Adopting a multi-stakeholder approach.** To manage a structural decline in mining production successfully, a multi-stakeholder approach is essential. We engage with national and regional governments, affected communities, our workforce, trade unions and civil society groups to consider options to address the socio-economic consequences arising from mine closure.
- **Supporting civic dialogue.** We aim to collaborate with key stakeholders, other mining companies and other industries to support civic dialogue and greater transparency in our operating countries – we believe this is critical to enable the advancement of human rights through the transition.

Just Transition *continued*

- **Supporting vulnerable people and groups.** We recognise that the transition may have a greater impact on vulnerable groups. We consider these groups during our stakeholder identification processes and determine the most appropriate ways of engaging with them. We try to understand and respect their concerns and identify opportunities for their inclusion and participation.
- **Promoting resilient communities.** Where possible, we seek to foster socio-economic resilient communities through building capacity, enabling diversification of local enterprises, and working to ensure local small, medium-sized and microenterprises (SMMEs) have fair access to our contracts.
- **Supporting skills development.** The retraining of our workforce who are directly affected by the energy transition is fundamental to support local economies – we aim to promote and contribute to skills development for the future energy system where appropriate.
- **Supporting infrastructure and public services development.** We recognise that infrastructure development not only supports our mine operations but provides stimulus for local employment and economic prosperity.

- **Advocating for government policies that support a Just Transition.** We recognise that many of our host governments are still developing their Just Transition policies. As such, we aim to support our host governments and to advocate for frameworks that ensure a share of existing taxes and royalties is allocated to supporting at-risk mining communities and their transition to a low carbon future.

Our principles for a Just Transition underpin our Group commitments, while supporting the development and implementation of locally appropriate plans.

Next steps

We will continue to develop our approach throughout 2023 and intend to publish a progress update in early 2024. Additionally, over the coming year, we plan to assess the transition risks and opportunities for key industrial assets that are expected to be most exposed to Just Transition impacts.

A Just Transition is a global, regional and country specific challenge which we cannot solve alone. In our approach we will seek to work together with governments, other businesses, and civil society to mitigate the downside risks and accelerate the upside potential that the energy transition facilitates.

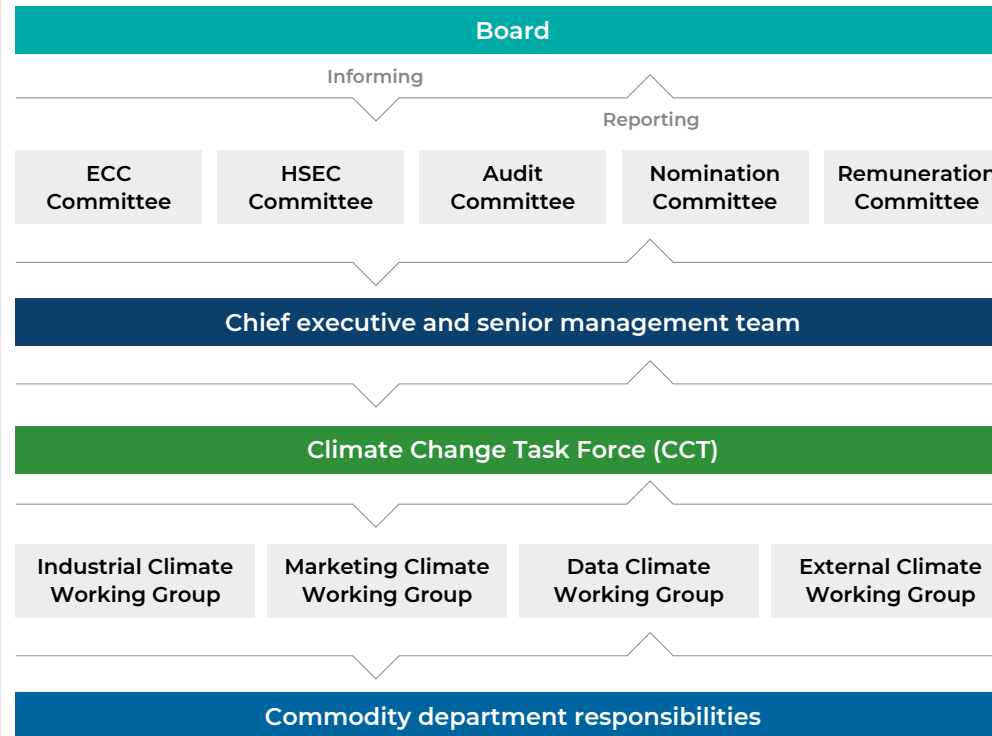


Governance

Our Board is responsible for oversight of overall performance and strategic direction, including with respect to climate change and considers climate-related issues when reviewing and guiding major acquisitions and disposals, overall risk management, capital expenditure and budgeting, setting the Group’s performance objectives and other strategic matters.

The Board is responsible for overseeing the Group’s climate strategy and progress against Glencore’s climate commitments. Implementation of our climate strategy is led by the management team via our Climate Change Taskforce (CCT). Progress on this topic is a standing item on the Board agenda, and is discussed in Board meetings at least twice yearly.

Overview of governance of climate-related risks and opportunities and key activities during 2022:



Governance *continued*

Glencore Board

During 2022, the Board undertook the following climate-related activities :

- Oversaw the Group's climate strategy and Glencore's response to climate-related risks and opportunities that affect our business;
- Monitored progress against Glencore's climate strategy, including our Scope 1, 2 and 3 emissions performance, and the ongoing development of our Group marginal abatement cost curve (MACC);
- Approved our annual climate planning and delivery progress and our four-year climate action plan framework that identifies opportunities to decarbonise our operational footprint;
- Through the Chair and CEO, consulted with shareholders on climate-related matters;
- Considered climate-related issues, with information provided by management, when it reviewed strategic decisions relating to major capital expenditures;
- Provided our shareholders at our 2022 AGM with their second advisory vote on the progress against our rolling three-year climate action transition plan;
- Received feedback from the shareholder consultation following the results of the vote, and discussed and approved the steps taken to respond to the feedback;
- Reviewed climate-related disclosures in the 2021 reporting suite and other external engagement;
- Participated in annual internal training on climate change, including on duties as directors, legal risks, external expectations and evolving climate issues. The training also emphasised the importance of an effective integration of climate change into the Group's risk management processes and related Board oversight; and
- Received details on emerging trends relating to climate-related litigation and 'greenwashing' allegations.

Informing

Reporting

The Board delegates specific health, safety, environment, community and human rights (HSEC&HR) topics, including climate change to its Committees:

Ethics, Compliance and Culture (ECC) Committee:	HSEC Committee:	Audit Committee:	Nomination Committee:	Remuneration Committee:
<ul style="list-style-type: none"> • Met four times during 2022; • Reviewed our stakeholder engagement, including on climate-related matters; and • Considered the significant matters on which the Group has made political representation and our use of lobbyists and the conduct and positions of our industry organisations during 2022 on material issues, in line with our Political Engagement policy. 	<ul style="list-style-type: none"> • Met four times during 2022; • Oversaw the communication, implementation and evaluation of HSEC&HR policies, including those that address climate change; • Oversaw the quality and integrity of any reporting to external stakeholders on HSEC&HR matters; and • Oversaw the delivery of climate-related performance, including relating to emissions and energy, consumption at our industrial assets. 	<ul style="list-style-type: none"> • Met four times during 2022; • Reviewed the Group's financial risk management, including those financial risks relating to climate change; and • Oversaw the Group's financial statements and reports, including climate-related disclosures. 	<ul style="list-style-type: none"> • Met three times during 2022; and • Evaluated the balance of skills, knowledge and experience of Board members in respect of climate change. 	<ul style="list-style-type: none"> • Met three times during 2022; and Supported the delivery of our climate strategy through the inclusion of climate-linked metrics and targets within performance-related pay for Glencore's CEO.

Informing

Reporting

Chief executive and management team

Governance *continued*

Chief executive and management team

The CEO is the named executive for driving the climate strategy within the Board and has responsibility for implementing the decisions of the Board and its Committees, as well as leading Glencore's operating performance and day-to-day management.

The CEO is Chair of the CCT, which is responsible for overseeing the climate strategy (developed in conjunction with the Board) and progress against Glencore's climate commitments.

As Chair of the CCT, the CEO has oversight of the CCT's four working groups and provides support and information to the Board for making strategic decisions, including those relating to capital allocation and portfolio management.

The CEO's scorecard for annual variable compensation includes 30% relating to HSEC matters, of which half is for safety performance and half for progress towards our short- and medium-term absolute emission reduction targets.

For 2022, three climate-related KPIs were set: (1) adopting a rolling four-year Climate Action Plan with a MACC that supports the achievement of the 2026 emissions reduction target; (2) activities approved in budget to support achievement of the 2026 emissions reduction target, specifically 265ktpa of CO₂ abatement from operational activities in the 2023 budget; and (3) providing stakeholders with attestable and comprehensive reporting of our Scope 1, 2 and Scope 3 emissions through the development of the draft Emissions and Energy Reporting Procedure that sets out the applicable definitions and standards required to achieve our net zero ambitions.

The CEO, CFO, Head of Industrial Assets and General Counsel lead our management team and are supported by the heads of each marketing and industrial department and the heads of corporate functions.

Senior managers from core Group corporate functions, as well as our industrial and marketing teams, participate in the four working groups that support the work of the CCT. This facilitates the provision of climate-related information relevant to a particular commodity or function, which the CCT then consolidates into a Group-wide approach.

Climate-related topics are addressed regularly by our Head of Industrial Assets with Industrial Leads. Topics may include opportunities to reduce our emissions through operating efficiencies and emission reduction schemes, as well as approaches to advocacy on climate-related matters such as carbon pricing.

Data collected by each industrial asset is consolidated to provide a commodity department's emissions. Each year, during our industrial asset planning and budget cycles, each Industrial Lead presents the department's emissions with accompanying workstreams and action plans to manage, mitigate and minimise emissions.

Informing

Reporting

Climate Change Taskforce (CCT)

Governance *continued*

Climate Change Taskforce (CCT)

- Met three times during 2022
- The CCT is accountable to the Board and is led by the CEO. Its other members include the CFO, Head of Industrial Assets and General Counsel, as well as representatives from key corporate functions including investor relations, finance and sustainable development.
- The CCT has responsibility and oversight for, and oversight of, the work streams and coordination of workflow for the delivery of Glencore's climate strategy and commitments, including activities relating to:
 - Decarbonisation of industrial activities;
 - Internal reporting standard development and data quality and consistency review;
 - Capital allocation and portfolio management;
 - Macroeconomic assessments including Group carbon pricing; and
 - External engagement, communication and advocacy.
- The CCT has four working groups to drive the delivery of our emissions reduction targets and net zero ambition. It is through these working groups that we assess initiatives to reduce our emissions, identify and leverage carbon marketing opportunities, design and implement systems to support complete, accurate and attestable reporting and monitor external trends, while coordinating and overseeing advocacy and communication efforts. These working groups also play an important role in helping management to be informed about and monitor climate-related issues through their upwards reporting.
- The CCT is supported by a management-level ESG Committee, which provides guidance on Glencore's ESG programmes and approves Group ESG policies, standards and procedures, including those relating to climate.

Informing

Reporting

<p>Industrial Climate Working Group</p> <ul style="list-style-type: none"> • Climate change risk assessment; • Energy and emissions reduction; and • Life of asset planning and budgeting. 	<p>Marketing Climate Working Group</p> <ul style="list-style-type: none"> • Group data validation and reporting procedure; • Research, innovation and governance; • Data model definition and integration and • Market execution. 	<p>Data Climate Working Group</p> <ul style="list-style-type: none"> • Group data reporting procedures and standards; • Carbon pricing and modelling; and • Carbon accounting. 	<p>External Climate Working Group</p> <ul style="list-style-type: none"> • Monitoring emerging climate topics; • External advocacy; • Legal; and • Disclosures.
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Informing

Reporting

Commodity departments' responsibilities

- During 2022, the commodity departments undertook the following activities:
- Established additional roles and responsibilities within their organisational structures for incorporating actions supporting the decarbonisation of our industrial assets into our standard business planning and operational delivery processes;
 - Participated in the Industrial and Marketing Climate Working Groups to increase knowledge sharing and enable acceleration of the adoption of decarbonisation action Group-wide;
 - Continued to work on the decarbonisation of their industrial assets through identifying carbon abatement opportunities that are inputs for the Group MACC;
 - Collaborated with industry organisations to strengthen the understanding of a commodity's emissions through developing life cycle analysis; and
 - Identified environmental products and power supply opportunities that support a more efficient approach to carbon and energy markets and our Scope 2 emissions reduction.

Governance *continued*

Implementation of updated policies and standards, and industrial risk management process

In 2021, we reviewed and updated our suite of policies and supporting standards addressing our HSEC&HR risks. In 2022, these were rolled out across the organisation. Our industrial assets are required to complete gap assessments and develop action plans to address any identified gaps.

Our policies and standards pertaining to climate change comprise:

- Our *Group Code of Conduct*, in which we recognise the potential impacts of climate change on our operations and our communities and commit to work to address these;
- Our *Group Environment Policy*, which sets out our environmental commitments, including a commitment to support the goals of the Paris Agreement (Article 2);
- Our Group standards: The *Group Environment Policy* is supported by several standards, of which the most relevant are the *Group Energy & Climate Change Standard* and the *Group Closure Standard*. In addition, some of our other standards address climate-related risks, such as our *Group Tailings Management Standard*, and the *Environment Standard*, which considers nature and biodiversity; and
- Our Group procedures: The *Group Energy & Climate Change Standard* is supported by our *Group Carbon and Energy Reporting Procedure*, which sets out the requirements for consistent and accurate reporting of our carbon emissions.

Implementation of the requirements of the standards in relation to climate change is subject to various levels of assurance across the Group and supported by the work of the Industrial Climate Working Group and the Data Climate Working Group.

Risks and opportunities

Our risk management framework, comprising our Enterprise Risk Management Policy and Enterprise Risk Management Standard, requires our industrial assets and departments to conduct regular risk assessments against the Group Risk Taxonomy, including in relation to climate-related risks. Industrial assets' risk registers inform departmental risk registers and subsequently are assessed for inclusion in the group-wide risk register.

Through this process, risks are assessed and prioritised for relevance and impact on financial and operational performance at different organisational levels. Risks with the highest Potential Maximum Consequence (PMC) at industrial and departmental level are generally included in the Group Risk Register. The PMC is determined applying the Group Enterprise Risk Matrix which considers consequences across multiple consequence categories, including environmental impact, human rights considerations, financial consequences, and image and reputation of the Group. The threshold for the most material financial consequence is an impact of more than \$500 million on operating profit, more than \$200 million on property damage and more than \$1 billion on asset value.

While climate risks are included in the Group Risk Taxonomy and are subject of standalone assessments, including in relation to existing and emerging regulatory requirements related to climate change, the complex and multidimensional nature of climate change necessitates that it be considered when assessing a number of topics. In particular, the following Standards require climate-related issues to be considered as part of the risk assessment process:

- Environment
- Water
- Tailings Storage Facilities
- Biodiversity

Risks identified by the industrial assets and departments are reviewed on a quarterly basis by our Head of Industrial Assets as part of quarterly business reviews. These include a review of the Group Risk Register and the actions taken to manage these risks.

Our approach to risk management (including the management of climate-related risks) is set out in our *2022 Annual Report* starting on page 89.

One of our principal controls for managing risks at a Group level is to develop a Group Standard, which sets expectations of performance for a particular topic, and forms the basis of internal and external assurance. Our Group standards require our industrial assets to identify and assess impacts and risks, including those related to climate where relevant, to develop appropriate responses, and to monitor and report on progress in order to manage those risks. Climate-related risks are prioritised, and materiality determinations are made, in line with the Group Risk Register process.

For climate-related impacts and risks, responses may include relevant engineering works, optimisation of operational processes and review of asset infrastructure design and maintenance. Where relevant, such as in the case of water-related risks, our industrial assets are required to assess the risks to other stakeholders, and to incorporate stakeholder-related considerations in the response measures to assist with decision-making in relation to mitigating, transferring, accepting or controlling climate-related risks.

We take a consistent approach to risk management throughout our business through a structured process that establishes a common methodology for identifying, assessing, managing and monitoring material risks, including climate-related risks. We assess climate, operational and financial risks holistically. As such, the identification, assessment and management of climate-related risks is fully integrated into the Group's overall risk management structure.

In particular, we require our industrial commodity departments to annually update their climate change risk assessments. The assessment considers climate-related risks and opportunities relevant to each commodity department's operations, environment and communities, and recognises the broader value chain of their operational activities. The commodity departments utilise a bottom-up approach, which considers regulatory risks (both existing and emerging), including carbon taxes, project approval considerations, impact on licence to operate, and physical risks, such as flooding, droughts and extreme weather events.

The risks are assessed and characterised in accordance with the Group's Enterprise Risk Matrix and consider the period until 2035 (or the end of an industrial asset's life cycle). Climate-related risks with a high rating, and any associated risk treatment actions, are prioritised and feed into our annual Life of Asset planning, Budget, and HSEC Strategy processes.

Our Group approach for climate change risk assessment encourages the use of the World Bank's Climate Change Knowledge Portal to support the assessment of physical risks to each of our operating jurisdictions of material impacts from weather-related

events in the period to 2035. This year's risk assessments found no fundamental changes to the risks identified for the industrial assets that we have assessed as being most at risk.

Looking ahead, we are developing internal guidance and a knowledge base to support our industrial assets in using consistent climatic models, and all available climate data related to the operations and the surrounding areas.

Our Group approach for climate change risk assessment encourages the use of the World Bank's Climate Change Knowledge Portal to support the assessment of physical risks to each of our operating jurisdictions of material impacts from weather-related events in the period to 2035. This year's risk assessments found no fundamental changes to the risks identified for the industrial assets that we have assessed as being most at risk.

When developing Glencore's climate strategy, we considered climate-related risks and opportunities across three time horizons:

- Short term (to the end of 2026): the first six years following the publication of our climate strategy at the end of 2020, which aligns with business and financial plans developed to deliver our 2026 target;
- Medium term (to the end of 2035): the mid-way point between 2020 and 2050, being the date of our 2035 target; and
- Long term (to the end of and beyond 2050): our longer-term ambition is to achieve, with a supportive policy environment, net zero emissions by 2050.

TCFD categorises climate-related transition risks as policy and legal, market, reputation, technology and physical. These are covered on the following pages.

Risks and opportunities *continued*

We have identified the following risks and opportunities as having the potential to impact the Group:

Policy and legal

Affected commodity/process/region

- All producing commodities
- Industrial and marketing activities
- Africa, Australia, Canada, Europe, Kazakhstan, New Caledonia, South America

Time horizon

Short and medium term

Risks and opportunities

Our ability to operate or develop industrial assets can be affected by regulatory and policy developments, such as carbon and corporate taxes, project approvals (or lack thereof or delays to project approvals), emissions caps or limits on emissions intensity, energy regulation, carbon trading and use of carbon offsets. In addition, changing regulations may increase operating costs and reduce profitability, impacting operational viability and future investments

There are increasing moves to introduce carbon import taxes, such as the European Union's Carbon Border Adjustment Mechanism. These have the potential to affect our products' export markets and trade flows. We also anticipate evolving regulation relating to energy intensity reduction for industrial emitters as countries put in place measures to meet their nationally determined contributions (NDCs).

Pricing carbon, either through direct taxes, emission trading schemes, or leakage avoidance mechanisms (such as border taxes) may create additional costs through the value chain, as well as provide opportunities to promote low-carbon products. Variations in carbon pricing mechanisms between multiple jurisdictions can affect both the cost and the importation of our products.

There has been a significant increase in litigation (including class actions), in which climate change and its impacts are a contributing or key consideration, including administrative law cases, human rights claims, tortious cases and claims brought by investors. In particular, a number of lawsuits have been brought against companies with fossil fuel operations in various jurisdictions seeking damages related to climate change. A number of regulators have also increased their scrutiny of companies' actions in respect of climate change, including through investigating claims related to inaccurate or misleading disclosure ('greenwashing').

Mitigation measures

We track and respond to regulatory and technology developments, as well as customer demand. We anticipate increased demand for our products that have lower embedded carbon content.

We are working internally and with relevant industry organisations on developing life cycle analyses to aid the calculation of our specific commodities' emissions¹². We play an active and constructive role in public policy development on carbon and energy issues, both directly and through participation in industry organisations. Through developing life cycle analysis tailored to our commodities and production processes, we identify optimisation potential, carbon reduction opportunities and energy efficiencies within our operations. We expect that technology will in time enable us to enhance reporting of our emissions throughout our value chain and to work with our stakeholders to reduce emissions.

We operate successfully in multiple jurisdictions that have direct and indirect carbon pricing or regulations. During 2022, we used actual carbon prices, and carbon prices consistent with the IEA's NZE 2021 scenario (as the scenario available at the time of our planning process) to assess the likelihood and impact of rising carbon price¹³.

We have identified some parts of our business that would likely experience financial stress in a high carbon price environment. However, our analysis of the impact of carbon pricing on operational costs has found that our business overall is likely to remain resilient. We consider local regulation and carbon price sensitivities as part of our ongoing business planning for existing industrial assets and new investments.

We have assessed that increasing demand for our transition metals commodities is likely to drive higher prices for those products in turn offsetting increases to processing costs arising from the implementation of carbon pricing instruments.

We seek to correct inaccurate or misinformation that we identify in the public domain and reiterate our position on key issues related to our climate change strategy and in relation to our corporate reputation.

¹² Measure of the exclusive total amount of emissions of CO₂ that is directly and indirectly caused by an activity or accumulated over the life stages of a product (IPCC, 2018: Annex I: Glossary (Matthews, J.B.R. (ed.)). In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global GHG emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty).

¹³ There are two main types of carbon pricing: emissions trading systems (ETS) and carbon taxes. An ETS – sometimes referred to as a cap-and-trade system – caps the total level of GHG emissions and allows those industries with low emissions to sell their extra allowances to larger emitters. By creating supply and demand for emissions allowances, an ETS establishes a market price for GHG emissions. A carbon tax directly sets a price on carbon by defining a tax rate on GHG emissions or – more commonly – on the carbon content of fossil fuels. It is different from an ETS in that the emission reduction outcome of a carbon tax is not pre-defined but the carbon price is. (World Bank Pricing Carbon available at <https://www.worldbank.org/en/programs/pricing-carbon>)

Risks and opportunities *continued*

Market

Affected commodity/process/region

Coal, copper, cobalt, lead, nickel, vanadium, zinc

Smelting, refining, marketing

Africa, Australia, Canada, Europe, Kazakhstan, New Caledonia, South America

Time horizon

Medium and long term

Risks and opportunities

In response to the ongoing decarbonisation of global energy supply and electrification of key sectors, including mobility and its associated infrastructure, we expect demand to grow rapidly for renewable energy technologies, and the metals and minerals required to build them.

Population and economic growth are driving increasing commodity demand. Changes in commodity use from emerging technologies, adoption of renewable energy generation and policy changes may affect demand for our products, both positively and negatively.

The global coal market is dynamic and subject to the changing geopolitical and energy landscape. Over time, coal's share of primary energy demand will decline.

We are a significant energy consumer. Energy is a key input and cost to our business as well as being a material source of our carbon emissions. Governments may impose taxes or levies on procured energy sources, limit supplies or introduce required purchasing or generation of renewable energy. The introduction of carbon taxes and/or clean fuel standards may result in increased operating costs for our industrial assets.

Increasing demand and higher commodity prices can drive substitution and market dislocations of products.

Mitigation measures

As one of the largest diversified natural resource companies in the world, we can support the delivery of climate goals by producing, recycling, marketing, and supplying the metals and minerals that are essential to the transition to a low-carbon economy.

Our approach strives to ensure that we identify, understand and monitor our emissions and climate change issues, to meet international best practice standards, ensure regulatory compliance and meet our commitments that support the goals of the Paris Agreement (Article 2).

We remain committed to reducing coal production in accordance with our industrial emission reduction targets and ambition.

As the global patchwork of energy and climate change regulation evolves, we closely monitor international and national developments and their potential to impact our industrial assets.

We consider energy costs and our emissions in our annual business planning processes. Commodity departments provide energy and emission forecasts for the forward planning period and provide details of projects that may reduce emissions, including identifying and developing renewable energy generation opportunities. Our business model is well placed to supply lower-carbon and renewable fuel solutions to our industrial assets through the supplier network of our energy marketing business.

Our assessment of potential mitigation and abatement projects forms the basis of our internal MACC. We utilise our MACC to act on cost-ranked emission reduction opportunities to mitigate high carbon prices and are pursuing lower emission sources in our businesses.

As a vertically integrated extractive and marketing business, we can seek to leverage our own carbon reduction efforts and market expertise to support the increasing needs for attestable low-carbon products. Our marketing segment's carbon strategy is expected to create additional value over time as markets and demand for carbon solutions in the commodity supply chain evolve.

Risks and opportunities *continued*

Reputation

Affected commodity/process/region

All commodities

Industrial and marketing activities

Global

Time horizon

Short and medium term

Risks and opportunities

Negative stakeholder perception around the role of the extractive sector may arise from its contribution to climate change or environmental and social impacts associated with resource exploitation. This, in turn, may impact the development or maintenance of our industrial assets due to restrictions in operating permits, licences, or similar authorisations.

These issues may impact our access to capital or insurance, resulting in increased costs of finance and/or divestment of our shares and bonds, as banks and other financial institutions discontinue working with companies involved in fossil fuels.

Mitigation measures

We engage with a broad range of stakeholders on diverse topics, including climate change and related areas of concern. Our engagement with our local communities and those directly affected by our operations aims to be transparent and honest. Where we identify differing opinions, we look for opportunities to find constructive solutions.

By maintaining strong relationships with our lenders and service providers, and investment grade credit ratings, we continue to have a broad range of sources from which to access funds. We regularly review our banks and other institutions' climate change-related policies and any evolution to applicable restrictions.

Technology

Transition metals, coal (vis-à-vis blue hydrogen)

Marketing

Global

Time horizon

Medium and long term

Risks and opportunities

Development of new technologies and lower costs for nascent industries may either drive increased demand for our commodities or result in substitution and lower demand. It may also provide opportunities to address our Scope 1, 2 and/or 3 emissions.

Mitigation measures

Increased adoption of renewable energy sources as a means of decarbonising energy supply is expected to create significant new demand for the current key enabling commodities, including copper, nickel and cobalt, which we are investing in.

Ongoing tracking of low emission technologies and products and their expected commercial availability and comparing it against our industrial Scope 1 and 2 emission reduction plans.

We are investing in emission reduction projects and initiatives, focusing on both our industrial operations and the use of our industrial products, as well as supporting low-emission coal technology projects and greenhouse gas (GHG)-related studies to address Scope 3 emissions, and we are supportive of technology such as CCS.

Risks and opportunities *continued*

Physical – acute and chronic

Affected commodity/process/region

Transition metals, coal (vis-à-vis blue hydrogen)

Marketing

Global

Time horizon

Medium and long term

Risks and opportunities

We have identified extreme weather events such as floods, hurricanes, and droughts, as well as changes in rainfall patterns, temperature and storm frequency as risks that can affect our industrial assets' operating processes, including costs and capacity. Availability of water for our industrial assets and nearby communities may be impacted by changes in climate, resulting in increased risk of flood at some industrial assets, and increased aridity in others. We report on our industrial assets' exposure to water-related risks on our water microsite.

The risk of an increase in frequency and severity of weather events such as floods and rainfall can impact the infrastructure at our industrial assets, particularly our tailings storage facilities, which may overflow as a result of extreme storms. We report on our tailings storage facilities on our website.

Mitigation measures

Our Energy & Climate Change Standard, TSF Management Standard and Environment Standard require our industrial assets to develop baselines and undertake annual risk assessments in these areas as described in more detail below. Our TSF and Environment Standards, supported by our Water Management Guideline, require our assets to assess climate-related risks, particularly in respect of changing weather patterns.

Our TSF Management Standard requires all our TSFs to be designed to the requirements set out by the Canadian Dam Association (CDA). We chose to benchmark against the CDA because it requires TSFs to be designed to higher flood frequency than may be required by local regulations in the jurisdictions in which we operate, and as such supports more climate-resilient design of our TSFs. For instance, we have upgraded the design of the spillways at some of our Peruvian operations to store and pass more water, thereby making them more resilient in the event of rapid extreme rainfall.

We conduct different reviews of our TSFs, including third party assurance and regular satellite monitoring, and these reviews include consideration of the impact of extreme weather events. We are working on providing detailed disclosures for our TSFs in accordance with the requirements of the Global Industry Standard on Tailings Management (GISTM) in line with the deadline set by the ICMM in August 2023.

Our Environment Standard requires our industrial assets to establish water baseline assessments and to evaluate both the asset and catchment context. This evaluation includes considering aspects relating to sustainable and healthy ecosystem functioning and the needs of other stakeholders within the catchment, such as nearby farmers and communities. Our Environment Standard also requires our industrial assets to consider climate-related risks and opportunities using climatic modelling provided by the IPCC when assessing water-related risks, assessing current and future projected climatic variability within the catchment area and the impact on shared water resources, water quality and supply, and operational requirements. Industrial assets then develop a catchment context-based water management plan and where risks are identified – primarily related to extreme flooding or increased droughts – industrial assets are required to undertake relevant engineering works, including, for instance, berms and spillways, as well as an assessment of planned production and water-related impacts.

As these actions will make our operations more resilient, we believe they may result in reduced operating costs going forward.

Energising today Advancing tomorrow

Our seven actions to Net
Zero



Our seven actions to support Net Zero

Our strategic approach to delivering our ambition

Our purpose is to responsibly source the commodities that advance everyday life. Our portfolio's diversity underpins our strategic ambition to play a meaningful role in supporting the decarbonisation of global energy demand through supplying metals such as copper, cobalt, zinc and nickel that are essential to the transition to a low-carbon economy.

We have identified seven core actions to support our emissions reduction targets and net zero ambition:

1. Managing our operational footprint:

Reducing our Scope 1 and 2 emissions

Our Group-wide Marginal Abatement Cost Curve (MACC) model captures existing and potential emissions reduction opportunities across our industrial portfolio

2. Reducing Scope 3 emissions:

Our diverse portfolio allows us to address our Scope 3 emissions, which contribute to more than 90% of our reported emissions. Our commitment to a direct reduction of our Scope 3 emissions, in particular through responsible closure of assets in our energy portfolio, will contribute to reducing global emissions. Additionally, through investing in our metals' portfolio we aim to support the expansion of low emissions technologies to reduce fossil fuel dependence

Our responsibly produced energy products will deliver near- and medium-term energy needs, essential to the advancement of developing economies and the delivery of the UN SDGs.

3. Allocating capital to prioritise transition metals:

Investing in the metals which can support the energy transition

We recognise the importance of disclosing how our material capital expenditure and investments support the goals of the Paris Agreement (Article 2).

4. Collaborating with our value chain:

Working in partnership with our customers and supply chains to enable greater use of low-carbon metals and support progress towards technological solutions to address climate change

We aim to identify opportunities to work with our customers and suppliers, policy bodies and standards-setting organisations to support and promote greater use of low-carbon metals, and to form strategic partnerships that enable critical transitions in transportation, infrastructure and energy systems.

5. Supporting uptake and integration of abatement:

Abatement is an essential contributor to achieving low or net zero carbon objectives

In order to achieve our emissions reduction targets and ambition, as well as adapt to emerging pricing mechanisms, we recognise the importance of abatement mechanisms such as Carbon Capture, Utilisation and Storage (CCUS) to achieve the goals of the Paris Agreement¹. Development and deployment of these mechanisms requires collective action; we are supporting these efforts directly and through policy advocacy.

6. Utilising technology to improve resource use efficiency:

Contributing to the circular economy

As both policy and consumer demands drive the move towards emissions reductions and a circular economy, technological developments are required to meet these ambitions. There is increasing recognition of the need to increase the use of secondary metals, which our recycling business is well placed to help meet.

7. Transparent approach:

Reporting on our progress and performance

Through regular clear and accurate disclosure of our actions to reduce emissions, we can support the understanding of our performance and progress, as well as set out how policy and technology developments can create opportunities and risks for our industrial portfolio.

SDG 17: Partnerships for the goals



SDG 7: Affordable and clean energy



SDG 9: Industry, innovation and infrastructure



SDG 13: Climate action



Action One: Managing our operational footprint

Our operational decarbonisation opportunities are underpinned by our understanding of our Scope 1 and 2 emissions footprint, as well as our established processes for identifying and delivering emissions reduction opportunities.

Identifying emission reduction opportunities

We have integrated the analysis and planning of decarbonisation opportunities across our operational footprint into our annual life of asset planning process. Potential decarbonisation opportunities and forward-looking profiles of carbon emissions resulting from life of mine production plans are developed for our industrial assets and aggregated by commodity department. Commodity departments' life of asset plans are reviewed at a corporate level and a Group consolidation of decarbonisation opportunities is completed to support a portfolio management approach.

Rolling four-year climate action plans

In 2022, our commodity departments formalised rolling four-year climate action plans, which outline operational footprint and supply chain decarbonisation initiatives, as well as response plans arising from climate risk assessments and carbon reporting more broadly. In particular, the plans address:

- Potential decarbonisation focus areas for each commodity department's Scope 1 emissions, typically covering:
 - Stationary combustion (such as boilers and generation plants);
 - Mobile combustion (such as vehicles, drilling and haulage plant and equipment);
 - Process emissions (such as vented CO₂ or methane, emissions from reagent-based neutralisation, or use of reductants); and
 - Fugitive emissions (emissions such as coal seam methane).
- Renewable energy transition plans for purchased electricity with the aim of addressing our Scope 2 emissions, outlining:
 - Short to medium term commercial solutions for green power purchase agreements (PPAs), supported by guarantees of origin or other renewable energy generation certification provided within our operating regions; and
 - Longer-term renewable energy provision commercial sourcing solutions, typically involving additionality and considerations for energy storage

- Generation of Scope 1, 2 and 3 emission profiles considering:
 - Paths towards supporting the Group's target of a 15% reduction by the end of 2026 and a 50% reduction by the end of 2035 across Scope 1, 2 and 3 emissions; and
 - Emissions profile to capture baseline adjustments for acquired and divested industrial assets (excluding closed industrial assets).
- Climate-related risks to our operations, across:
 - Regulatory, including carbon taxes, project approval considerations and impact on license to operate; and
 - Physical, including flooding, droughts, extreme weather events, and the impacts to supply chains' ability to procure consumables and distribute product over land or sea in conjunction with associated infrastructure.

Each plan is supported by a commodity department team that includes project managers and subject matter experts. At Group level, the operational footprint decarbonisation plans are overseen by our Head of Industrial Assets, and progress against the plans is reviewed at routine quarterly business reviews, as part of annual asset and business planning processes, and by the Climate Change Taskforce and Board.

Annual review of marginal abatement cost curve (MACC)

Our MACC enables an assessment of viable and economic abatement opportunities across our industrial assets, with respect to potential scale and economics. We undertake a uniform approach to MACCs at a commodity department level. This delivers a Group-wide aggregation of key decarbonisation opportunities and actions, which in turn supports a holistic approach to reviewing the pipeline of initiatives from concept to execution stages. Industrial asset-level data is incorporated into our annual planning cycles, supporting the assessment and triggering of investment decisions, including in relation to consideration of carbon price scenarios in these opportunities.

Our MACC continues to evolve and identify emissions reduction opportunities across our portfolio. When practically and commercially viable, implementation of abatement opportunities is pursued. For example, this may include anticipating when increases to carbon prices and/or technological advancement at scale make the use of biofuels more attractive than diesel, or when the building of renewable power installations can sensibly replace purchasing grid-generated power.

In 2022, we continued to refine our MACCs, considering both short-term (2026) and medium-term (2035) horizons. We have already implemented projects identified by the MACC process (e.g., renewable PPAs) and will continue to progressively implement projects as the engineering and planning processes are completed.

Further, through understanding the impact of key climate scenarios' range of carbon prices on our industrial assets' cost curves

Action One: Managing our operational footprint *continued*

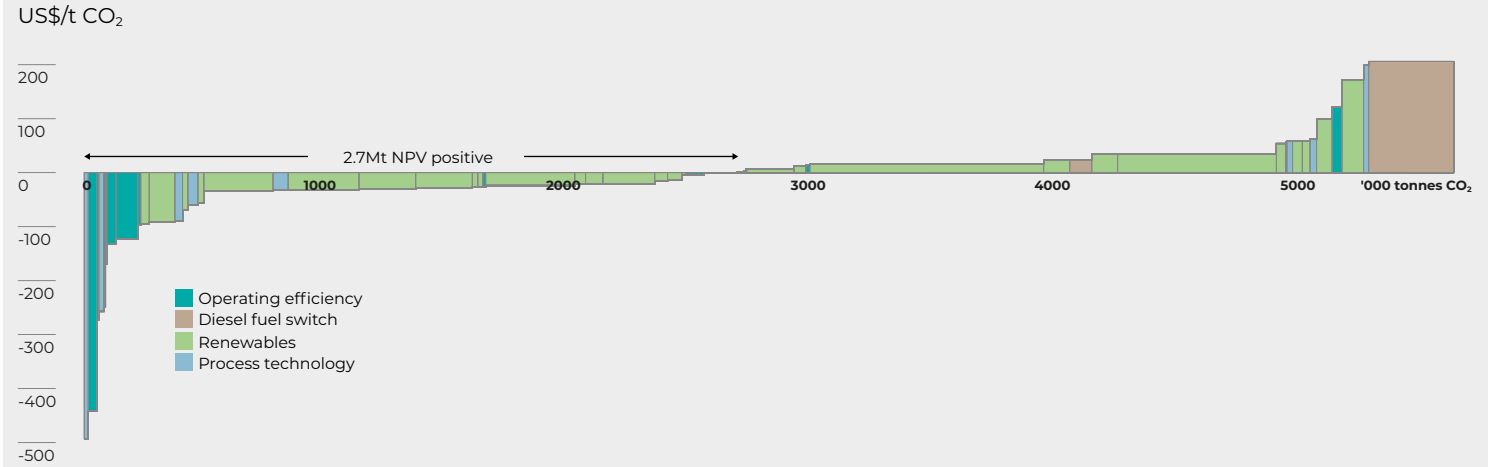
and emission profiles, we are better-placed to identify where and when to make investments in abatement opportunities, targeting value-accretive investments. In this manner, we aim to incorporate climate change considerations into our business strategy rather than considering emissions reduction as a standalone work stream.

Our 2026 MACC indicates that we are well-positioned with an inventory of operational footprint decarbonisation opportunities to support the delivery of our short-term emissions reduction target of 15% by the end of 2026.

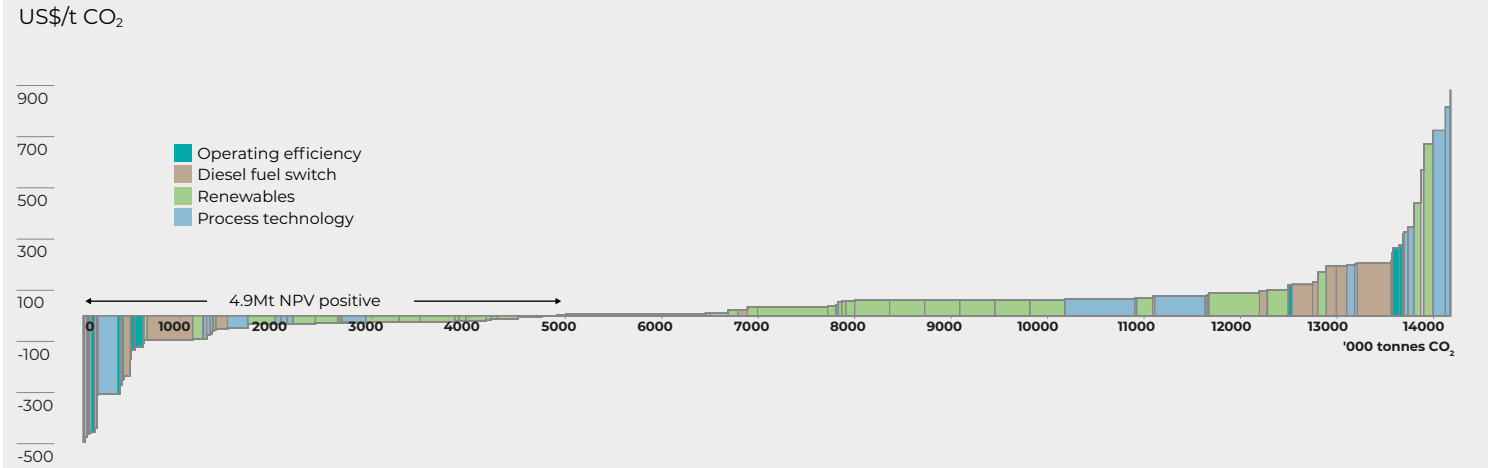
Our 2035 MACC identifies the potential abatement opportunities required to support the achievement of our medium-term target of a 50% emissions reduction by the end of 2035.

The MACCs show a large potential inventory of value accretive or near-value neutral decarbonisation opportunities for potential delivery by 2026. Some of these initiatives are at a concept level, while others have progressed to an advanced engineering phase. All the identified initiatives are required to go through a robust development and evaluation process to assess viability. This inventory demonstrates commercially advantageous decarbonisation opportunities, resulting from the differentiation of our industrial asset base by commodities and geographies.

Group-level MACC for year 2026



Group-level MACC for year 2035



A MACC presents the costs or savings expected from different opportunities, alongside the potential volume of emissions that could be reduced if implemented. MACCs measure and compare the financial cost and abatement (reduction) benefit of individual actions based on \$/tCO₂e.

A MACC shows each opportunity is an action, presented as a box above or below a horizontal axis. The boxes above the horizontal axis indicate there is a cost to that action – the higher the box, the higher the cost. Boxes below the horizontal axis indicate a saving from that action – the lower the box, the greater the saving. The MACC enables

comparison between actions and annualised costs or savings. The width of the box indicates the action's potential volume of reduction per year, expressed as tCO₂e. The curve shape is created by ordering the actions from lowest cost to the left, to highest cost on the right.

Action One: Managing our operational footprint *continued*

Reducing our Scope 1 emissions

While most of our more immediate abatement opportunities are associated with the reduction of our Scope 2 emissions, we have identified several opportunities to reduce our Scope 1 emissions. These include operational efficiency improvements across all commodity departments that may result in, for instance, reduced diesel use, displacement of diesel with alternative fuels such as biodiesel and smelting process efficiencies at our copper and zinc smelters, which aim to reduce the use of energy and reagents/reductants.

Our consolidated four-year climate action plan has identified a total of 4.4 million tonnes of CO₂ in Scope 1 abatement opportunities, represented on the 2035 MACC. We have already implemented projects identified by the MACC process (e.g., energy efficiency opportunities) and will continue to progressively implement projects as the engineering and planning processes are completed.

Many of our industrial assets include downstream processing into final metal products, including copper, nickel, ferroalloys and zinc. Therefore, carbon-based reductants are among the largest emissions contributors to our Scope 1 operational footprint. These reductants are currently required for the smelting of mineral concentrates to produce final metals and are typical of a vertically integrated supplier of the commodities required to drive the energy transition.

Emissions from the use of reductants are hard to abate and require a fundamental change to existing process technology. For this reason, our decarbonisation approach considers a longer timeframe needed to address emissions from the use of reductants. We are currently collaborating with technology providers and research institutions to support the technological developments required in this area.

We are working in three areas to advance the application of innovative solutions to address our Scope 1 emissions:

- Electrifying our fleet – with existing/improving technologies
 - Prioritised action at a number of our large open-pit operations connected to national grids already utilising renewable energy sources, where applicable, such as some of our South American copper mines.
 - Some of our industrial assets have advanced studies underway on opportunities to provide electricity directly to existing diesel-electric haul trucks via the application of trolley assist technologies. Pilots are planned in the next two years at our South American copper sites which will not only contribute towards a meaningful reduction in the diesel consumption of the installed fleets but will also establish the necessary technology deployment experience and capability to support our potential growth projects, such as El Pachón.

- In Canada, our new underground nickel mine that is planned to be fully electric, Onaping Depth, and we expect to ramp up production in 2024. We have calculated that it should deliver annual reductions of approximately 1.7Mm³ natural gas, 2.2Ml diesel fuel and 12,120 tonnes of CO₂e emissions, compared to non-electric applications.
- Utilising new technology and equipment
 - In the medium to longer term, our planning of mining fleet replacement is expected to align with the arrival of new technology, such as battery electric and hydrogen fuel cell haul trucks. We anticipate these technologies becoming available towards the end of this decade and to commence more widespread commercial application after 2030. We continue to engage with a range of major mining equipment manufacturers to develop an understanding on the timing of commercial readiness of such technology, as well as to assess its commercial viability.
 - Our commodity departments continue to progress studies to understand the ‘whole of mine’ energy and infrastructure requirements to support such new technologies. For example, in Chile, we are studying the potential to partially displace fossil fuel usage with solar steam generation. In addition to reducing the CO₂e emitted by gas-fired boilers, this would provide a hedge against fuel price volatility through generating carbon-free steam. Our studies indicate that solar steam generation would reduce CO₂ emissions by approximately 22,000 tonnes per year.
- Various commodity departments are also investigating the potential for hydrogen production. In general, the use of hydrogen within our industrial operations is mostly seen as a potential for the replacement of carbon-based reductants in smelting processes, or as a fuel source to be consumed near the point of generation.
- Collaborating with our peers and equipment manufacturers
 - As a member of the International Council on Mining and Minerals (ICMM), we are participants in its Innovation for Cleaner, Safer Vehicles initiative. The initiative brings together ICMM members, original equipment manufacturers and technology suppliers to accelerate the introduction of zero-emission mining vehicles. It is working to accelerate the development of zero-emission mining equipment and ultimately aims to enable mining operations to adopt such zero-emission surface mining fleet by 2040.

Reducing our Scope 2 emissions

The indirect emissions associated with the electricity consumed by our industrial assets, our Scope 2 emissions, are also a major action area within our decarbonisation plans. As a vertically integrated producer of metals, the largest contributor towards our Scope 2 operational footprint is the consumption of electricity by our smelting and refining assets.

Action One: Managing our operational footprint *continued*

Managing methane

Methane is a naturally occurring gas that is found in the earth's atmosphere and geological structures. A flammable hydrocarbon, it is a principal component of natural gas. Methane is emitted from natural processes, industry, agriculture and waste management activities. It can also be emitted during the production and transport of coal, natural gas and oil.

Methane's lifetime in the atmosphere is shorter than CO₂ but it is more efficient at trapping heat and as a result the GHG impact of methane is greater than that of CO₂.

All coal seams may contain some level of methane and/or carbon dioxide gas. These gases are released when coal is mined in either open cut or underground operations, although the amount of methane released is dependent on various factors, including coal seam depth and the amount of carbon within the coal being mined.

In general, underground mining releases more methane than open cut mining because the gas content of deeper-lying coal seams tends to be higher. In open cut operations, methane escapes from freshly exposed coal faces, overburden and strata that can be fractured or impacted because of blasting activities.

Management of gas is a major safety requirement for underground coal mining. Current best practice for gas management involves draining the gas from the seam to a level allowing safe production before underground mining occurs, which assists in reducing a mine's emissions by allowing the capture and destruction of methane.

We continue to consider and implement methane abatement opportunities in line with our Group decarbonisation approach where it is considered reasonable and feasible to do so.

We are working on research projects that investigate better measurement, capture and mitigation of methane emissions from underground mines. Over the past 20 years, this has been done in partnership with the Australian Coal Industry's Research Program (ACARP), the CSIRO, the University of NSW and the University of Queensland.

In Australia, we report our emissions in accordance with the Australian National Greenhouse and Energy Reporting (NGERS) legislative framework. This is the recognised statutory reporting system which underpins the Australian national GHG emission inventory.

We note claims made in relation to methane emissions from our Australian coal business from the use of methane detection satellite technology.

Currently, the Australian government's position is "More ground-truthing and verification of the satellite data is necessary to improve precision, especially in the Southern Hemisphere. This could be done, for example, using aviation flyovers, which sample the methane plumes more intensely, and which could yield valuable information about the quality of the satellite data. More openness about methods applied is necessary. Studies should be repeatable and replicable by others. Overall, like the IPCC, the government believes that it is premature to use satellite data to quantify emissions from methane sources.

"Nevertheless, such methods show enough promise to be developed into quality assurance systems for methane sources more generally. Developing robust systems will take time, dialogue and transparency in method development.

"While the Department remains cautious about the risks of over-interpretation of the data by researchers, in light of the new information coming forward the Department intends to review inventory methods for methane in the coming inventory cycles.

In particular, the Department intends to review methods in relation to the application of default factors for fuel combustion by reciprocating gas engines; for the estimation of fugitive emissions from open cut coal mines and from wastewater from industrial sources."*

We therefore anticipate that the government will be undertaking further reviews in relation to the measurement and reporting of methane emissions. While we monitor this closely, we are taking steps to study the impact of other methods of measurement and are also actively reviewing a range of emerging technologies for the detection of fugitive methane emissions, such as satellite monitoring, aircraft and drone-mounted methane sensors. While there is currently a broad range of variables and factors that influence the accuracy of these technologies, and they currently have a high degree of uncertainty in estimating emission rates, particularly for diffuse emission sources, the ongoing development of this technology will likely result in a higher degree of accuracy.

* https://www.dcceew.gov.au/sites/default/files/documents/quarterly_update_of_australias_national_greenhouse_gas_inventory_-_march_2021.pdf

Action One: Managing our operational footprint *continued*

Where our industrial assets purchase electricity from grids on which renewable energy sources are available, and it is determined economic to do so, we generally prioritise entering into Power Purchase Agreements (PPAs) that move our energy consumption to renewable sources, such as hydro, wind or solar.

Our consolidated four-year climate action plan for industrial assets has identified a total of 9.9 million tonnes of CO₂ in potential Scope 2 abatement opportunities, as represented on the 2035 MACC¹⁴. As indicated above, we have already implemented projects identified by the MACC process (e.g., renewable PPAs) and will continue to progressively implement projects as the engineering and planning processes are completed.

For our industrial assets that are not connected to grids and are reliant on local electricity generation, we are studying options for installing on-site renewable energy systems, such as wind and solar. In some of our operating jurisdictions, we are also investigating opportunities to support national grids' utilisation of renewable energy sources, as well as biofuels and energy storage.

Our ferroalloys business in South Africa, a high consumer of energy, has signed exclusivity agreements with independent providers for several PPA commercial opportunities for renewable energy (wind and solar) with the potential to deliver over 1,200GWh/annum. The ferroalloys business is also advancing studies for on-site renewable energy generation opportunities at its Rhovan vanadium mine, Eastern Chrome Mines and Wonderkop Smelter, which together could eventually deliver around 633GWh/annum.

Reviewing reporting of our Scope 2 emissions

Glencore's Scope 2 emissions are indirect emissions from the generation of electricity, heat, cooling, or steam purchased and consumed by industrial assets under our operational control.

Calculating Scope 2 emissions requires a method for allocating CO₂e emissions from energy generation to the end consumers on a given grid. Two methods can be used: the location-based method reflects the average emissions intensity of grids on which energy consumption physically occurs, while the market-based method reflects emissions emitted by the generators from which the industrial asset contractually purchases electricity bundled with emissions abatement certificates (EACs), or unbundled electricity with EACs on their own, and for which a specific emissions factor is known.

The location-based method emphasises the connection between collective consumer demand for electricity and the emissions resulting from local electricity production. As the sources of electricity generation on most grids evolve to become more sustainable, we expect location-based emissions to gradually decrease over time. However, this process is unlikely to move fast enough for Glencore to meet its emissions reductions targets.

To deliver on our climate commitments, it is likely necessary proactively to purchase or finance renewable energy in the markets in which we operate. Scope 2 emission reductions resulting from these proactive choices are only accounted for in the market-based method.

In 2022, we expanded our market-based reporting to cover all industrial assets as set out in the Boundaries and scope in the *About this report* starting on page 71 and enhanced our market-based emissions methodology to incorporate new contractual agreements and the improved availability of residual grid emissions data.

Our industrial assets are now required to use appropriate and accurate, high quality contractual instruments in their respective energy markets to account for all purchased and consumed electricity, in line with Group guidance on qualifying market-based instruments reflecting the GHG Protocol's Scope 2 Quality Criteria.

These changes have required a restatement of Glencore's 2019 market-based Scope 2 emissions baseline which is provided in this report. Following its implementation, we are adopting the market-based approach for measuring and reporting our industrial assets' progress.

While the market-based approach is expected to be our primary Scope 2 method, for transparency and comparability, we will continue to report separate figures using both Scope 2 methodologies, as recommended by the GHG Protocol.

¹⁴ Scope 2 emission abatement initiatives are currently shown on the MACC on the basis of location-based reporting criteria. As a result of the change to market-based Scope 2 emissions going forward, Scope 2 MACC initiatives will be re-calculated during 2023

Action One: Managing our operational footprint *continued*

Abating our Scope 1 and 2 emissions

Our Scope 1 and 2 emissions reduction approach shows the impact of identified MACC initiatives, in combination with the depletion of our coal industrial assets, as we step through our short- and medium-term targets for our emissions reductions. Looking ahead to 2023, during the budget review management has approved more than 290,000 tonnes per annum of Scope 1 and 2 abatement opportunities.

Our Scope 1 and 2 emissions reduction plan demonstrates alignment of our current process capability and our emissions reduction targets and net zero ambition.

We have identified the potential benefit of existing MACC initiatives across a range of Scope 1 and 2 emissions categories. We are working to identify the additional MACC initiatives necessary to close the remaining gap on meeting our medium-term target and longer-term net zero ambition.

2022 performance

During 2022, our operational footprint, or our Scope 1 and Scope 2 market-based emissions, were 28.0 million tonnes CO₂e. This represents a 2% increase from the 27.4 million tonnes recorded in 2021 (restated) and is largely attributable to increased production from our Koniambo nickel and ferroalloys smelters. Our 2022 Scope 1 and Scope 2 market-based emissions represent a reduction of 10% compared to the restated 2019 base year (31.2 million tonnes CO₂e).

Our Scope 1 emissions (direct emissions) were 16.6 million tonnes CO₂e in 2022. This figure includes emissions from reductants used in our metallurgical smelters along with emissions from the combustion of diesel and other fossil fuels directly by our industrial assets. It also includes the CO₂e of methane emissions from the coal and oil operations under our operational control, which accounts for around 18% of our Scope 1 emissions. Our 2022 Scope 1 emissions represent a 4% increase on the 15.9 million tonnes recorded in 2021 (restated) and are mainly the result of onsite coal fired power generation linked to increased nickel production at Koniambo. Our 2022 Scope 1 reported emissions represent a reduction of 13% compared to the restated 2019 baseline year (19.0 million tonnes).

Our Scope 2 market-based emissions (indirect emissions from the generation of electricity purchased and consumed by our industrial assets) were 11.4 million tonnes CO₂e in 2022. This was unchanged from our 2021 Scope 2 market-based emissions; however, the 2022 figure includes an increase in emissions from purchased electricity linked to higher production at our ferroalloys' smelters in South Africa, which was offset by the delivery of purchased

electricity emissions abatement initiatives at other industrial assets within the portfolio. Our 2022 Scope 2 market-based emissions represent a reduction of 6% compared to the restated 2019 baseline year (12.2 million tonnes).

The total energy use by our industrial assets, was 193PJ in 2022 (2021 restated: 186PJ). Renewable energy sources delivered 12.3% of our industrial energy needs (2021 restated: 13.7%). The primary renewable energy sources are the low-carbon, hydropower electricity suppliers to our operations in eastern Canada and the DRC.

Since setting our emission reduction targets in 2019, we have experienced significant, heavily Covid-19 and weather impacted volatility in our production profile, resulting in an emission reduction profile that is non-linear. While our reported Scope 1 and 2 market-based emissions declined 19% in 2020, this was followed by an increase of 9% in 2021 and 2% in 2022, resulting in a cumulative reduction of 10%. Our transition metals businesses includes energy intensive smelting operations and, as a result, our annual metal production volumes will be a major driver of annual Scope 1 and Scope 2 emissions.

Looking ahead, we anticipate continuing to realise abatement opportunities identified in the MACC, recognising that some of the more impactful abatement opportunities in our action plans have multi-year delivery timelines, especially where they involve establishing renewable energy additionality.

Scope 1 emissions (CO₂e million tonnes)

16.6



2021: 15.9 (rebased from 15.0)

Scope 2 location-based emissions (CO₂e million tonnes)

10.4



2021: 10.4 (rebased from 10.8)

Scope 2 market-based emissions (CO₂e million tonnes)

11.4



2021: 11.4 (rebased from 11.1)

Total energy use (petajoules)

193



2021: 186 (rebased from 178)

Action Two: Reducing Scope 3 emissions

Our diverse portfolio allows us to address this portion of our footprint by reducing our coal production, investing in our metals portfolio, and supporting deployment of low emission technologies.

Our Scope 3 emissions are our indirect emissions across our industrial assets' value chain. They include our emissions from upstream supply chains, downstream customer use of our products, third-party logistics and transportation, and emissions associated with joint ventures that we do not operate. We aim to address these emissions by making changes to our product production and our portfolio, recognising that for value-chain abatement to be just, reduction and mitigation strategies must consider the broader social, economic, and environmental impacts of the global transition to net zero.

For Glencore, Scope 3 emissions represent over 90% of the emissions on which we report. Reducing Scope 3 emissions is essential for making a meaningful contribution to reducing our global emissions.

The transition to a low carbon economy is expected to reduce demand for fossil fuels and increase their production costs. Coal's share of primary energy demand will therefore decline over time, but for many countries it continues to drive economic and social development, including as an input to steel and cement and through provision of reliable, safe and affordable energy.

As stated in our 2020 climate report, "No single pathway can define how individual economies and the world will transition." The

Paris Agreement acknowledges the critical importance of sustainable economic development and the need for measures to protect the climate system to be appropriate for the specific conditions of each country.

In 2022, the IPCC presented its sixth assessment report (AR6)¹⁵ and the IEA updated its NZE scenario¹⁶ to take into account the actions taken globally in the intervening period from their prior reports and updated data availability reflecting the status of global energy demand and emissions. The IEA scenarios show coal's use in advanced economies declining more rapidly, while the rate of coal use decline in developing economies, particularly in the Asia Pacific, is considerably slower.

However, as illustrated by the IEA's WEO 2022 scenarios in the charts, each of the energy and climate scenarios show a continued role for abated thermal coal for electricity generation in 2050, with the rate of decline subject to the scale of investment into renewable energy supplies¹⁷. The IPCC's AR6 C1 scenario shows all primary energy from coal in 2050 is abated, while the IEA NZE scenario shows thermal coal use for power generation is all abated from 2040 and unabated coal will only be used in industrial processes by 2050.

Moreover, continued geopolitical uncertainty has heightened energy security vulnerabilities and, while some jurisdictions are seeking to accelerate renewables uptake, the associated short- to medium-term impacts may delay the pace of the non-linear transition away from fossil fuels in certain other regions.

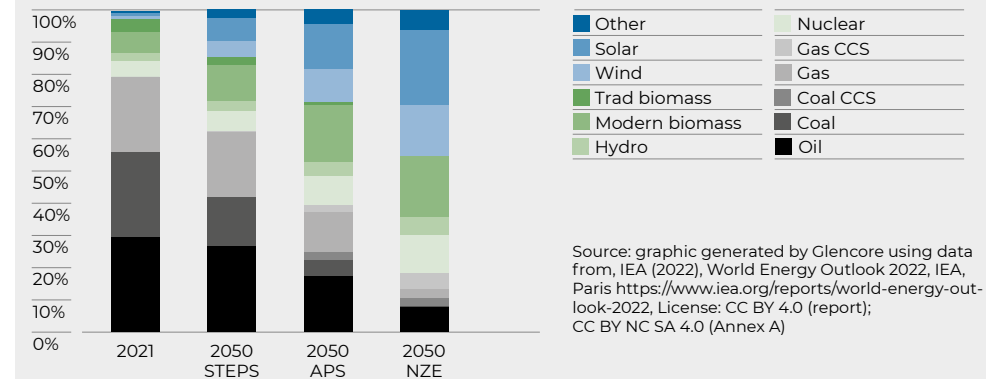
We are committed to managing a decline of our coal business to meet our targets and thereby pursue the twin objectives that we draw from the Paris Agreement. We have

not committed to doing so in line with a particular scenario or pathway, due to the uncertainty inherent in global efforts to progress toward the energy transition. Scenarios are not forecasts of future demand and therefore the scenarios developed by the IPCC and IEA are one of several inputs into our climate strategy and are not in-and-of themselves determinative of our strategy.

For instance, if the world is unable to deliver sufficient renewable energy and CCS capacity within the relevant timeframe, we

foresee a potential role for unabated thermal coal for electricity generation beyond 2040. Therefore, and in support of our strategy of a managed decline of our global coal portfolio, we are developing our own approach to abatement beyond 2040, which may include using offsets, as well as CCS¹⁸. We acknowledge that this does not directly align with the IEA Net Zero 2040 phase-out of unabated thermal coal for electricity generation.

World Energy Supply - IEA WEO 2022



Source: graphic generated by Glencore using data from, IEA (2022), World Energy Outlook 2022, IEA, Paris <https://www.iea.org/reports/world-energy-outlook-2022>, License: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

¹⁵ IPCC, 2022: Summary for Policymakers. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

¹⁶ IEA (2022), World Energy Outlook 2022, IEA, Paris <https://www.iea.org/reports/world-energy-outlook-2022>, License: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

¹⁷ International Energy Agency World Energy Outlook 2022 Chapter 5 "Outlook for energy demand"; and Chapter 6 "Outlook for electricity" available at <https://www.iea.org/reports/world-energy-outlook-2022>.

¹⁸ International Energy Agency World Energy Outlook 2022 Chapter 5 "Outlook for energy demand"; Chapter 6 "Outlook for electricity" available at <https://www.iea.org/reports/world-energy-outlook-2022>; and the Intergovernmental Panel on Climate Change Sixth Assessment Report available at <https://www.ipcc.ch/assessment-report/ar6/>.

Action Two: Reducing Scope 3 emissions *continued*

Responsible decline of our coal portfolio

We have committed to a coal production decline consistent with our carbon emissions reduction commitments and a consolidated production cap of 150 million tonnes, which is an annual portfolio-wide production of coal industrial assets as included in our production reporting. If and while there is demand for coal, and it is economic to do so, we plan to continue to operate our mines to the end of their economic life and in accordance with our climate commitments, which include not exceeding our production cap.

Our 2022 coal production was impacted by abnormally wet weather in Australia and totalled 110 million tonnes as per our annual production reporting; 32% below our restated 2019 baseline. Over the next three years, we anticipate our production will remain relatively flat at 110 million tonnes per annum, +/- 5 million tonnes. We expect coal production to decline by at least ~50% from 2019 levels by 2035. Beyond 2035, our remaining coal mines will primarily be in Australia. Our overall decline will not be linear; however, we will manage our coal portfolio (including closures and mine life extensions) to pursue our stated emissions reduction targets.

Since 2019, we have closed three coal mines, La Jagua and Calenturitas, as well as Hlagisa, an independently managed joint venture in which we have a 23.12% equity interest. In addition, we plan to close three coal mines in the near term and at least six additional mines by the end of 2035. These mines comprise Cerrejón, Liddell, Newlands, Integra, Clermont, Oaky North, Mangoola, and Impunzi, as well as Wonderfontein, an

independently managed joint venture in which we hold a 24.3% equity interest.

We plan to continue to manage our portfolio and its emissions footprint in a manner consistent with our climate change strategy and in line with our ambition of achieving net zero emissions by 2050. We are not progressing thermal coal greenfield investments. However, we plan to continue to progress various brownfield coal extensions or expansions at existing mines, while continuing to be a responsible steward of these assets as we progress the phase down of our global coal portfolio. This is consistent with our commitment to a managed decline of our global coal portfolio, and not a complete phase out of coal. For example, the proposed expansion of the approval period for Hunter Valley Operations (HVO), an independently managed joint venture in which Glencore has a 49% interest, is currently the subject of a permitting process.

During 2022, there were developments regarding our Glendell, Valeria and Sukunka projects:

- the New South Wales Independent Planning Commission (IPC) rejected our existing application to extend mining at our existing Glendell open cut operations;
- we withdrew the Valeria coal project from an approvals process and placed the project under review. The decision was made in the current context of increased uncertainty and is consistent with our commitment to a responsibly managed decline of our global coal business and our ambition of achieving net zero emissions by the end of 2050; and
- the Provincial Government of British Columbia and the Canadian Federal Government refused an Environmental

Assessment Certificate for our Sukunka steelmaking coal project. We are reviewing this determination before making a final decision on the project.

Our strategy applies to our Group at a global level and does not necessarily translate to a linear or uniform reduction in emissions in all countries where we operate. Going forward, we are identifying new opportunities for some of our coal resources. Further details are available in our work on blue hydrogen, available in *Action Five: Supporting uptake and integration of abatement* on page 42.

We believe an approach of responsible stewardship over a managed decline of our coal business and its associated emissions, as the global economy decarbonises, is the most supportive of an orderly and just transition to a low-carbon economy.

Market outlook

The global coal market is dynamic and subject to a changing geopolitical and energy landscape. In 2022, the Asia Pacific market accounted for over 75% of global coal demand and was the destination for around 70% of Glencore's sales. In both of the IEA's 2022 Scenarios, Stated Policies Scenario and Announced Pledges, the Asia Pacific market continues to account for over 85% of expected global coal demand in 2035 and over 80% in 2050. The IEA has not published regional coal demand for the NZE Scenario.

Due to reduced nuclear power generation in 2022, coal demand in Europe increased and Glencore's European sales similarly increased to cover the energy shortfall. Glencore's increased sales volume to Europe included replacement of Russian coal which was diverted to markets which remained prepared to accept Russian coal (not supplied by Glencore).

Increased European coal demand in 2022 combined with weather related supply disruptions contributed to an overall shortfall of supply to other markets. As the EU invests in LNG and renewables, we anticipate European coal demand to decline.

Comparing the average energy content of thermal coal exported from Australia, Colombia and South Africa (i.e., where Glencore's mines are located) and other coal-exporting regions highlights that the average coal exported from Indonesia has a 20% to 25% lower energy content than coal from the countries where Glencore operates its coal mines, meaning that Indonesian coal contributes to materially higher CO₂ emissions per unit of volume. Curtailment of available higher-energy coal supply that is effectively replaced by lower-energy Indonesian coals will contribute to greater global CO₂ emissions.

Action Two: Reducing Scope 3 emissions *continued*

Responsible stewardship

We are a responsible miner of coal, making the safety of our workforce our highest priority and upholding high standards of environmental performance.

In Australia, we are committed to returning mined land to either self-sustaining native ecosystems, agricultural use or other suitable purposes that meet both Government regulations and community expectations. Details of the rehabilitation work our coal business undertakes in Australia is available [here](#).

Our global coal business continues to make a significant positive socio-economic contribution in the geographies where we operate.

Supply chain engagement

We recognise the importance of engagement and collaboration with our value chains to understand and reduce our Scope 3 emissions.

In 2022, we reviewed our Responsible Sourcing programme and updated our Group policy commitments. Our Supplier Code of Conduct, which is to be incorporated by reference into our supplier contracts, sets out a requirement for our suppliers of products to provide information about their carbon footprint and decarbonisation plans on request. We have also developed supporting training materials to help our suppliers meet our expectations, including on climate change. These are designed to assist us in meeting our reporting obligations, fulfilling our due diligence commitments, and inform our supplier selection decisions.

See *Action Four: Collaborating with our value chain* on page 39 for further details of our engagement activities.

Reporting on Scope 3 emissions

We recognise that comparable, and transparent emissions data is fundamental to our climate disclosures. As value chain emissions are not directly generated or measured, the most significant climate data challenges centre around Scope 3 emission disclosures and data availability. The proliferation of voluntary and mandatory emissions reporting requirements are driving a need for clearer, comprehensive, and verifiable climate disclosure. As part of the continued evolution in our approach to Scope 3 emissions reporting, we reviewed our methodology and decided that restating on the basis of operational control for Scope 3, categories 10 and 11 emissions (which are principal categories in which we can exert influence to achieve meaningful reductions) would improve clarity and transparency.

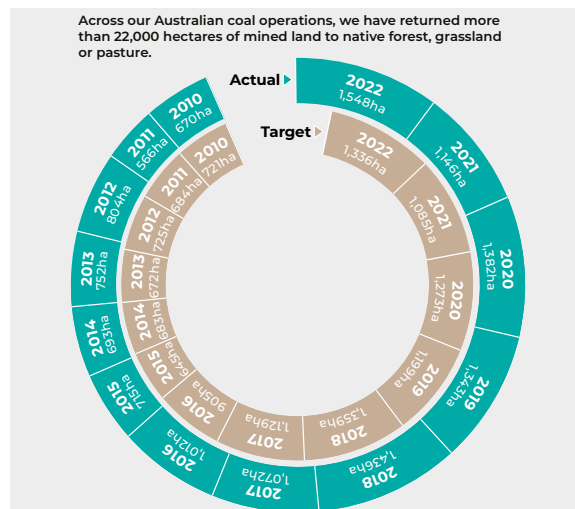
Our climate engagement activities focus on improving data availability, quality, and consistency within our respective value chains to support more accurate, comparable, and transparent Scope 3 emission accounting, target setting and transition planning by Glencore and our external stakeholders.

Scope 3 accounting best practice requires that the reported emissions inventory is specific to the products and processes in a company's value chain. This level of granularity necessitates a shift in methodology from spend-based or industry-average to value-chain specific emission measurements. In 2022, we developed our draft Emissions and Energy Reporting Procedure applicable to all our industrial assets, to facilitate this transition, while accounting for existing gaps in emission data quality and availability.

Our draft *Emissions and Energy Reporting Procedure* considers the GHG Protocol Corporate Standard and guiding accounting principles of relevance, completeness, consistency, transparency, and accuracy. Where there were trade-offs between these principles, we balanced them to generate an emissions inventory that best supports delivery of our climate objectives namely:

- To provide an accurate assessment of relevant climate-related risks and opportunities that exist both within our business and value chains;
- To identify emission hot-spots and prioritise reduction efforts across our operations and value-chains;
- To accurately track performance against our decarbonisation targets and net-zero ambition over time in a transparent and consistent manner; and
- To enhance stakeholder information through transparent, accurate and consistent reporting of relevant emission sources.

Our improved methodology set out in the draft Emissions and Energy Reporting Procedure defines consistent rules for our accounting across Scope 1, 2 and 3 emissions, using the organisational boundary of operational control. For indirect emissions (Scope 2 and 3), the draft Emissions and Energy Reporting Procedure has a built-in emission factor hierarchy requiring that those emissions are calculated using the most product, process, or value-chain specific emission data available. As value-chain data quality and availability improves over time, our calculations will move from secondary (such as industry averages) to primary (specific) emissions data.



Action Two: Reducing Scope 3 emissions *continued*

During 2022 we aligned our data collection and reporting practices with the requirements set out under our draft *Emissions and Energy Reporting Procedure* for Scope 1 and 2 emissions. During 2023, our aim is to formally roll out the draft Emissions and Energy Reporting Procedure to our industrial assets, and to implement our updated Scope 3 methodology across our industrial assets.

Our updated Scope 3 approach, which we plan to publish during 2023, will reflect a revision in our emissions accounting methodology and an expansion of categories and activities included in our Scope 3 inventory. To allow stakeholders to consistently track and compare our reported industrial emissions footprint over time and measure progress against our climate commitments, these changes will require a further recalculation and restatement of our 2019 baseline.

We plan to publish the results in our 2023 Climate report.

2022 performance

Scope 3 emissions (CO₂e million tonnes)

342

2021: 365 (rebased from 254)

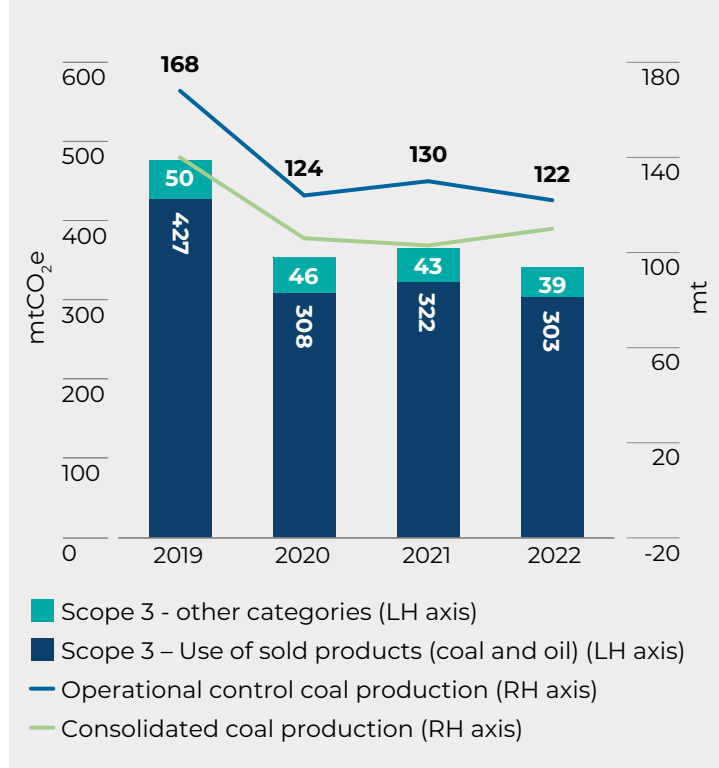


The total Scope 3 emissions of our industrial assets in 2022 were 342 million tonnes CO₂e, compared to 365 million tonnes CO₂e in 2021, restated from 254 million tonnes. The decrease was principally due to a 6% reduction in saleable coal volumes produced in our operationally controlled industrial assets, the result of severe weather impacting production at our Australian coal assets and community blockades at Cerrejón. As per guidance provided in our 2022 results presentation, consolidated coal production in 2022 was 110 million tonnes and is guided at 110 +/-5 million tonnes for 2023.

In 2022, emissions resulting from our customers' usage of the fossil fuels produced by our industrial assets totalled 303 million tonnes CO₂e (2021: 322 million tonnes CO₂e), representing around 90%¹⁹ of our total Scope 3 emissions.

¹⁹ Excludes emissions related to production from independently-managed Hunter Valley Operations, Hlagisa and Wonderfontein, which are reported in category 15 (investments).

Scope 3 emissions vs coal production



Action Three: Allocating capital to prioritise transition metals

We seek to align our material capital expenditure and investments with the goals of the Paris Agreement (Article 2) and our own climate commitments. Our disciplined approach to capital allocation seeks to reflect market supply and demand dynamic.

Reflecting Glencore's decentralised business model, we encourage our commodity departments to identify growth opportunities that help deliver our overall business strategy of responsibly producing products required for global decarbonisation.

We monitor and evaluate market dynamics and adjust capital allocation accordingly to reflect our relative views on commodity prices over the short, medium and long term. This can sometimes result in period-on-period variations in capital allocation application.

We seek to evaluate all material capital expenditure decisions with a number of considerations, including:

- long-term commodity price assumptions, market analysis and financial returns;
- health, safety, environment, social performance and human rights commitments, e.g., measures linked to safety or management of tailings storage facilities; and
- alignment with our climate strategy and targets, such as decarbonisation of our industrial footprint, planned reduction in coal mining, or investments in transition metals.

We are always looking for mergers and acquisitions opportunities that could strengthen the Group which have to be assessed against our capital allocation policy and considered from a climate strategy perspective.

As a major producer of the commodities that underpin the current battery chemistry and infrastructure growth initiatives that are expected and required to power electric vehicles and energy storage systems, our capital expenditure (currently and into the future) is heavily weighted towards energy transition metals, including various South American copper projects, African copper and cobalt, Kazakhstan polymetallic investments and nickel projects in Canada.

Our current and forecast capital expenditure aligns with our climate targets, reflecting our commitment to prioritise the development of our portfolio's transition metals. Running down our industrial energy portfolio will contribute to a reduction of our emissions.

We maintain flexibility in positioning and repositioning our capital to address emerging climate-related risks and opportunities.

Going forward, we intend to continue to allocate capital to operate and to deplete our upstream energy industrial assets in a responsible manner that is consistent with our Values and our climate strategy. More specifically this comprises the intended cessation of mining at at least twelve coal mines between 2019 and the end of 2035, along with an associated decrease in the capital expenditure required by the energy portfolio.

Meeting emissions reduction targets: Scope 1 and 2

Our capital allocation strategy focuses on the activities that are the value drivers of our business and their corresponding risks and opportunities, which may differ from those of our peers. The location, nature and energy profile of these activities means that our decarbonisation programme does not require significant upfront investment allocation, but instead informs our industrial asset portfolio construction decisions, and capital expenditure investment over time.

One of the principal sources of our Scope 1 emissions is the use of diesel in our surface fleet. We are working on several opportunities to reduce or remove the use of diesel. The replacement of our fleet occurs periodically (typically around ten-fifteen years), and mining fleet investment decisions seek to address fuel efficiency and opportunity to increase uptake of electrification.

Our Scope 2 emissions arise principally from our smelting operations due to their significant energy requirements, and the use of power from hydrocarbon-powered grids. Where commercially feasible, we are working to move our energy consumption to renewable sources. In other cases, and where it is aligned with our overall business strategy, we may consider disposing or closing industrial assets. Disposal and closure decisions and processes will be affected in a manner consistent with our Values and relevant policies and standards, for example, our Closure Standard.

Meeting emissions reduction targets: Scope 3

Our energy portfolio, notably coal mining, will decline over time to meet our emissions reduction commitments. Our capital allocation to this portfolio follows the following principles:

- investments must be consistent with our overall emission reduction commitments;
- coal or oil brownfield discretionary capital expenditure must have a high return/short cash payback so as to generate cashflow to fund the overall portfolio and reflect the higher cost of capital associated with this business; and
- we adopt a portfolio approach, i.e., industrial asset-specific investment proposals are considered in the context of their impact on the overall portfolio trajectory. This may mean an increase in production at one operation, provided this does not undermine the overall portfolio decline trajectory.

Our energy portfolio capital allocation reflects market volatility, inflation and 'lumpy' investments associated with safe operational management and decarbonisation, such as more efficient truck fleets and renewable energy sources. For these reasons, we are not able to specify 'peak capex' (dollar or year) for our energy portfolio, though the overall trend and trajectory is expected to be significantly down over time.

Action Three: Allocating capital to prioritise transition metals *continued*

2022 capital expenditure and guidance for 2023-2025

In 2022, our total capital expenditure on industrial assets was \$4.8 billion (2021: \$4.4 billion), of which, 43% was for our copper and cobalt, 20% for zinc and 10% for nickel, with the following key projects:

- development of Collahuasi copper joint venture's desalination and water transportation project;
- ongoing mine development work at South American and African copper industrial assets, and
- major new mine developments at Sudbury INO and Raglan nickel mines in Canada.

\$1.2 billion (25%) of our 2022 industrial capital expenditure related to energy industrial assets (2021: \$819 million). Some \$355 million of this relates to mining fleet replacements, which are expected to be more energy-efficient than the previous generation of equipment (2021: \$265 million).

The consolidation of Cerrejón, our Colombian coal business, from January 2022 grossed up the capital expenditure to 100% (previously 33%). Cerrejón had a slow start to 2021 as it recovered from Covid shutdown and industrial action, which resulted in a significantly higher capital expenditure year-on-year (\$169 million in 2022 versus \$90 million in 2021, on a 100% basis).

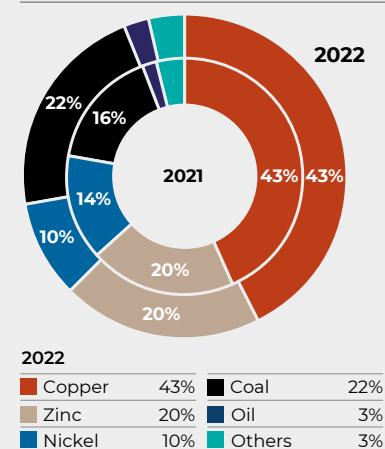
The increase also includes the necessary rebuild and upgrade costs at the Astron refinery in Cape Town following a major incident in 2020 (total Astron capital expenditure of \$103 million in 2022, versus \$43 million in 2021). Investments made during the refinery's rebuild and upgrade enable the processing of lower sulphur crudes and delivery into the growing low sulphur fuel oils market. The refinery is on track for compliance with South Africa's Clean Fuels II legislation, which comes into force in 2027.

We anticipate that our Group capital expenditure in 2023-2025 will increase to \$5.6 billion per year, with \$1.1 billion per year allocated to expansionary activity in our metals portfolio, \$3.2 billion per year dedicated to sustaining our metals assets, and \$1.3 billion per year supporting the continued operation of our energy portfolio in line with our climate commitments. Some meaningful level of capital expenditure relating to Scope 1 and 2 emissions reduction initiatives and opportunities has been included in our sustaining expenditure plans.

Our key expansionary projects in our metals portfolio over this period build on ongoing work and include:

- Copper: Collahuasi desalination/4th line/5th mill; Mutanda ramp-up; Horne emissions reduction project;
- Zinc: Zhairam (Kazzinc);
- Nickel: Raglan Phase 2 and Onaping Depth projects;
- Recycling: sampling plant for electronic scrap (e-scrap) at BRM; and
- Metals exploration: extensive campaigns planned in Kazakhstan, Canada and Australia.

Capex by department



Responding to carbon pricing

We operate successfully in multiple jurisdictions that have direct and indirect carbon pricing or regulation. We take a systematic approach to local regulation and carbon price sensitivities as part of our ongoing business planning for existing industrial assets, and new investments.

We use actual carbon prices where they exist and assess the sensitivity of industrial assets to possible future carbon prices in order to assess the potential impacts on investment decisions arising from carbon pricing regulation. We expect the rising cost of carbon will increase operating costs, increasing the cost of production, which, in turn, would ordinarily be passed on to consumers. For our sensitivity analysis during 2022, we applied the carbon prices shown in the table below, which were consistent with the IEA's 2021 NZE scenario, which was the scenario available at the time:

Carbon price - US\$/t	Advanced economies	Emerging markets	Emerging markets
	As legislated		
2022			
2025	80	40	5
2030	130	90	15
2035	180	140	25
2040	200	160	35

Applying these carbon prices to some of our commodities shows marginal supply costs (90th percentile) increasing by some 10% to over 60%, depending on the commodity.

Action Four: Collaborating with our value chain

We are working in partnership with our customers and supply chains to enable greater use of low-carbon metals and to support progress towards technological solutions.

We engage extensively with our suppliers, customers, commodity and product associations on climate-related matters. Our activities in 2022 focused on establishing collaborative efforts on emission accounting standards, life cycle assessments, emission profiles for our products and decarbonisation efforts. We are actively looking for opportunities within our value chains to drive the uptake of carbon neutral solutions and low emission technologies.

Our supplier engagement activities focused on the development and deployment of low emission technologies and input efficiency at our industrial assets. Workstreams are underway to drive improvements in the recovery of ammonia from extraction processes, reduce emissions from transportation through the deployment of electric highway transport semi-trucks, use of hydrogen fuel cell-powered vehicles, and shortening of haulage routes.

Supporting the circular economy

Our Horne Smelter and CCR Refinery copper businesses in Canada are working with the federal government and external providers to develop a traceability solution that tracks in real time emissions from end to end of the supply chain to provide visibility and transparency of the carbon footprint. The solution will assess a product's carbon footprint based on data captured throughout the product life cycle.

The approach will develop an existing platform to include real time lifecycle analysis (LCA) to understand and follow the carbon footprint and real time content of recycled inputs (such as electronic scrap or copper waste from construction).

We are providing access to our copper production data and by products from our copper processes (tellurium, nickel sulphates, selenium, gold, platinum and palladium), to enable the implementation of a traceability platform. The main objective is to evaluate Scope 1, 2 and 3 emissions and build an active inventory by identifying and measuring infeed material (copper concentrate, recycled material and electronic waste) while tracing material through Glencore's value chain from smelting at Horne Smelter to refining at CCR.

Tied with production data and enhanced by elements of the AI-LCA algorithm, this traceability platform module is expected to allow us to access real-time evaluation of GHG emission variations by providing tools to measure, monitor, pilot and assess sustainable changes through our value chain.

It is hoped that this three-year project can eventually be leveraged to develop a better understanding of the global GHG impact of copper across its lifecycle.

In addition to lowering our own emissions, we are aiming to contribute to the decarbonisation of global value chains through the offer in the future of low-carbon products, such as 'greener' aluminium, to our customers, see *Establishing strategic partnerships* on page 41. As a vertically integrated extractive and marketing business, we can leverage our carbon reduction efforts as well as market expertise to meet the increasing needs for attestable low-carbon products.

Underpinning our decarbonisations efforts

Our carbon and power trading team have established desks in London, Singapore, Australia and China with a global remit. The desks have expertise in both compliance and voluntary carbon and global power markets covering carbon management and strategy, trading, origination, structuring and execution. Gradually these desks will consolidate all market-facing execution across these key decarbonisation products.

During the year, the team evaluated the Group's industrial asset footprint with a focus on those jurisdictions with the highest carbon emissions, working closely with industrial asset teams. The desks provide an advisory role to support the evaluation of Glencore's potential Scope 2 decarbonisation initiatives. In parallel, the desks are looking to develop their own supply of environmental products to support the Group and our customers' activities in managing their emissions, which we expect to start delivering in 2023.

Action Four: Collaborating with our value chain *continued*

In addition, the carbon desk is involved in the Group's compliance with various carbon tax reporting requirements, which is an expanding role as various operating jurisdictions introduce new taxes or expand existing regimes to new points in the value chain in-line with their national decarbonisation targets.

The desks are actively trading carbon and power, creating liquidity and offering both physical and cash settled forward hedging capacity across these markets.

Supporting consistent Scope 3 reporting across the industry

We actively participate in ICMM climate change initiatives. We participate in the ICMM's climate working group, and our CEO is a member of its Climate Advisory Group, which oversaw the development of ICMM's net zero commitment.

During 2022, ICMM's climate work focused on developing GHG Protocol aligned Scope 3 emission reporting guidelines and sector appropriate target setting methodology options. The development of guidelines and methodologies will allow all member companies to take a consistent approach to defining and reporting Scope 3 emission targets by the end of 2023.

Understanding product carbon footprint

An accurate assessment of our products' environmental impact requires a methodology with clear rules on emission attribution. It needs to be able to trace emissions through complex production processes and account for various product and service inputs and outputs throughout the product's value chain and life cycle. LCA and Product Environmental Footprint (PEF) studies facilitate this analysis by tracking and assessing a product's environmental impacts, including GHG emissions, which arise from mining, processing, use, maintenance and disposal or recycling.

We contribute to LCA, and PEF studies conducted by commodity- and product-specific industry organisations. We work with industry organisations to develop and publish common guidance on how to calculate the carbon footprint of the metals they represent, and to get their methodology accepted by the London Metal Exchange (LME). We contributed towards the development of these methodologies, including the International Copper Association's, the International Zinc Association's and the Nickel Institute's technical guidance.

Product carbon footprint in practice

We are an active member of the Global Battery Alliance (GBA) and participate in various working groups as well as holding a board position. During the year, we continued to contribute to the GBA's Battery Passport, which provides a framework for collecting and reporting on certain ESG data for batteries.

As part of this we also contributed to the development of the GBA's 'rulebook' for the GHG footprint of batteries. This rulebook aims to provide a consistent method for collecting GHG data for each step in the supply chain and aggregating it so that the carbon footprint of different batteries can be communicated transparently and in a comparable way.

We also supported the testing of this methodology through a battery passport pilot. This involved participating supply chain companies – including our Kamoto Copper Company industrial asset in the DRC and an electric vehicle manufacturer – inputting data relating to GHG emissions, human rights and child labour, in accordance with the GBA's methodology. The data was linked to the physical flow of material and consolidated into a 'passport' through the traceability platform developed by the ReSource Consortium, an end-to-end collaboration between major battery supply chain players.*

* If the ReSource project is formally constituted, it will be a joint venture between multiple parties; and its constitution is subject to global anti-trust approvals being granted. Until it is constituted, ReSource's consortium partners act individually only in relation to ReSource.

Action Four: Collaborating with our value chain *continued*

We are a member of Recharge, Europe's industry association for advanced rechargeable and lithium batteries, and participate in its working groups on EU regulations, UN waste transportation and LCA and PCF for batteries. Recharge is developing the Product Environment Footprint Category Rules (PEFCR) for rechargeable batteries, as part of the EU's Environmental Footprint pilot phase. Through our participation in these working groups, we are seeking to contribute to the development of rules for future legislation affecting participants in the rechargeable batteries value chain in the EU.

As demand for attestable low-carbon products evolves beyond the industry organisations' LCA granularity, we are assessing options to develop modelling tools that support an accurate assessment of GHG emission footprints specific to our products, production processes and value chains.

Responding to CBAM

The EU's carbon border adjustment mechanism (CBAM) aims to complement its Emissions Trading System, which caps the amount of GHG emissions that can be released by industrial installations in certain sectors. The CBAM is designed to bridge the gap in carbon costs between the EU and the rest of the world by levying a border tax on carbon embedded in imported goods comparable to how European producers are taxed.

The CBAM will be phased in gradually starting with a transition period that runs from October 2023 to December 2025. During this period, the CBAM will apply to a selection of sectors at high risk of carbon leakage, which includes aluminium. Importers of designated products within these sectors will have to report the emissions embedded in their goods. A financial adjustment on reported embedded emissions will not be levied until the final CBAM system is put in place, expected in 2026.

We supply third-party produced aluminium products to EU customers. We are working with these non-EU suppliers to establish and verify data collection, calculation and reporting practices aligned with the EU's CBAM requirements. While an initial reliance on default emission values is unavoidable, through the CBAM's initial reporting phase we will transition our data collection and reporting from country-average to supplier- and product-specific embedded emissions.

We are monitoring how the CBAM methodology for calculating embedded emissions compares with alternative approaches to assessing products' carbon footprints. These emission attribution learnings feed into our in-house product-based emission accounting method.

Furthermore, collected supplier- and product-specific embedded emissions contributes to our upstream Scope 3 emission calculations, specifying our emission inventory to our value-chains. This supports our overall objective to transition from industry-average to supplier-specific Scope 3 emissions accounting practices as data quality allows. See *Reporting on Scope 3 emissions* page 35 for further details.

Establishing strategic partnerships

We recognise the need for strategic relationships between raw material and battery producers to support the delivery of our net zero ambition and the development of a resilient battery supply chain with strong environmental and social credentials.

For example, through our extensive customer base, we identify opportunities to sign long-term supply agreements for lower-carbon "greener" aluminium²⁰. In September 2022, we announced 10-year alumina supply and aluminium offtake agreements with Press Metal Bintulu Sdn. Bhd. (Press Metal), a producer of "greener" aluminium. Glencore has a long-standing relationship with Press Metal and this transaction is an important step in our strategy to increase Glencore's supply of "greener" aluminium to the global market and support Press Metal's expansion ambitions as a key primary producer of such lower-carbon aluminium.

In the cobalt supply chain, we have been working over the last few years to structure long-term commercial relationships with companies at different downstream points. This includes the work on the Global Battery Alliance's battery passport pilot (see case study on page 40). In April, we announced our latest multi-year cobalt supply agreement with General Motors, in which we will supply cobalt from our Australian Murrin Murrin nickel industrial asset. As with many of our long-term cobalt relationships, the agreement includes collaboration on supply chain due diligence and support for collective initiatives, such as the Responsible Minerals Initiative (RMI).

We are also actively growing cobalt partnerships that help to develop new integrated supply chains. For example, at the beginning of 2022, we signed a five-year cobalt tolling contract and amended a five-year feed purchase agreement with Electra Battery Materials to produce cobalt sulphate. This agreement enables the production of a battery grade cobalt product for the electric vehicle market that is traceable and mined and refined with renewable hydroelectric power. Electra aims to produce 5,000 tonnes of low carbon cobalt sulphate annually, which Glencore plans to market to its extensive customer network. This is the continuation of a strong relationship initiated several years ago by Glencore funding initial engineering studies on the refinery and providing technical input to the company.

Another example is the strategic global marketing relationship we agreed with United States Strategic Metals, LLC (USSM) in February 2022. USSM is a vertically integrated cobalt and nickel producer in North America. Our relationship includes a long term off-take agreement for 100% of USSM's products, which include cobalt and nickel sulphates, lithium products and copper cathode. We are also exploring options for a recycling and raw materials sourcing agreement to support the ramp-up of USSM's hydrometallurgical processing facility.

²⁰ Aluminium produced either with a renewable energy source or due to its proportion of recycled content

Action Five: Supporting uptake and integration of abatement

We recognise the importance of abatement mechanisms such as carbon, capture and storage (CCS) to achieve the goals of the Paris Agreement.

CCS is an integrated suite of technologies that can capture CO₂ before it is released into the atmosphere. CCS technology can be deployed to capture CO₂ emissions produced by using fossil fuels in electricity generation and industrial processes and then sequester this CO₂ underground. The International Energy Agency (IEA) identifies CCS as needing to form a key pillar in efforts to put the world on the path to net-zero emissions²¹.

Supporting CCS

We have been a long-term supporter of CCS. Our wholly owned Carbon Transport and Storage Company (CTSCo) Project aims to demonstrate carbon capture from a power station and the sustainable permanent storage of the captured CO₂ in the Surat Basin in Queensland, Australia.

The Australian government's National Carbon Storage Taskforce report and the Queensland government's Greenhouse Gas Storage Atlas identified the Surat Basin as a key geo-sequestration area²².

The CTSCo Project has the potential to store significant volumes of CO₂ to reduce existing and future sources of emissions. The project is intended as a first step toward large-scale CCS, with the potential for emissions from multiple industrial emission sources being captured and safely stored.

The CTSCo Project provides an opportunity for Australia to develop expertise in CCS from coal-fired power generation and assume a leadership role exporting this technology to international customers. As well as supporting the reduction of emissions from the use of fossil fuels across a range of industrial sectors in Australia, the project also provides a platform for producing low-cost hydrogen.

CTSCo has commenced the environmental approvals process with the Queensland Government for the demonstration project.

Blue hydrogen

Hydrogen can be a lower-carbon energy product and is a feedstock for other chemical products. It has the potential to reduce emissions in hard to abate industries such as chemicals, steel, long haul transport and marine transport, as well as playing a flexible role in balancing the electricity grid. Currently hydrogen is mainly produced from fossil fuels with CO₂ being vented freely to the atmosphere, known as grey hydrogen. Low emission hydrogen can be mainly produced as either green (hydrogen produced from water and renewable energy using electrolysis) or blue hydrogen.

Blue Hydrogen is the production of hydrogen from fossil fuels (coal or natural gas) integrating CCS capture of CO₂. We believe that commercial scale production of blue hydrogen can contribute to the transition towards a hydrogen-based economy by decarbonising fossil fuels.

Such fossil fuel transformation processes rely on gas or coal as the source fuel. As coal is gasified, hydrogen and CO₂ are produced. The CO₂ is captured and sequestered underground utilising CCS technology. As the coal gasification process is exothermic, it generates power for the process, reducing overall energy requirements.

In 2021, according to the IEA, global demand for hydrogen was 94Mt²³. Over 80% of production came from transforming fossil fuels (e.g., steam methane reformation and coal gasification), with the remainder produced as a by-product of refinery processes, which use fossil fuel as an input. A small balance of 2021 production (approximately 0.1%) was from renewable-based processes (e.g., water electrolysis using renewable electricity).

In future, we anticipate that blue hydrogen may be produced economically, with up to 90% of the emissions captured and sequestered when compared to traditional grey hydrogen. Today, green hydrogen requires a significant step change in costs (capital and dedicated renewable electricity operating costs), capacity factors (e.g., utilisation of an electrolyser using a dedicated renewable source) and efficiencies to economically compete at scale with alternate energy sources.

The IEA's 2022 World Energy Outlook shows low emissions hydrogen production is required to grow from 1Mt hydrogen equivalent in 2021 to 452Mt hydrogen equivalent by 2050 in the NZE scenario. While 73% or 329Mt of 2050 production is derived from electrolysis, 27% or 122Mt of production is derived from fossil fuels with CCS²⁴.

We are investigating the potential to produce blue hydrogen and ammonia through utilising a relatively small portion of the Wandoan coal resource (up to 4 million tonnes per annum) as feedstock. We do not plan to develop the Wandoan coal resource as a traditional coal mine for the purpose of servicing traditional coal markets. This project is at an early stage, and we have committed initial funding for pre-feasibility studies. No final investment decision has been made on this project. Based on the current pre-feasibility studies our intention is to capture around 90% of emissions from this process and permanently store them deep underground using CCS technology. We believe this blue hydrogen project with CCS could be an important bridge to enabling the broader uptake of hydrogen technology and applications in Australia and globally.

Further information on the project is available at: glencore.com.au/operations-and-projects/surat-hydrogen-project

²¹ <https://www.iea.org/reports/ccus-in-clean-energy-transitions>

²² Carbon Storage Taskforce National Carbon Mapping and Infrastructure Plan - Australia available at <https://www.iea.org/reports/world-energy-outlook-2022> <https://www.globalccsinstitute.com/resources/publications-reports-research/national-carbon-mapping-and-infrastructure-plan-australia-full-report/>; and B E Bradshaw et al. An assessment of Queensland's CO₂ Geological Storage Prospectivity - The Queensland CO₂ Geological Storage Atlas, available at <http://www.cgss.com.au/Assesment%20of%20Qlds%20CO2%20geological%20storage>.

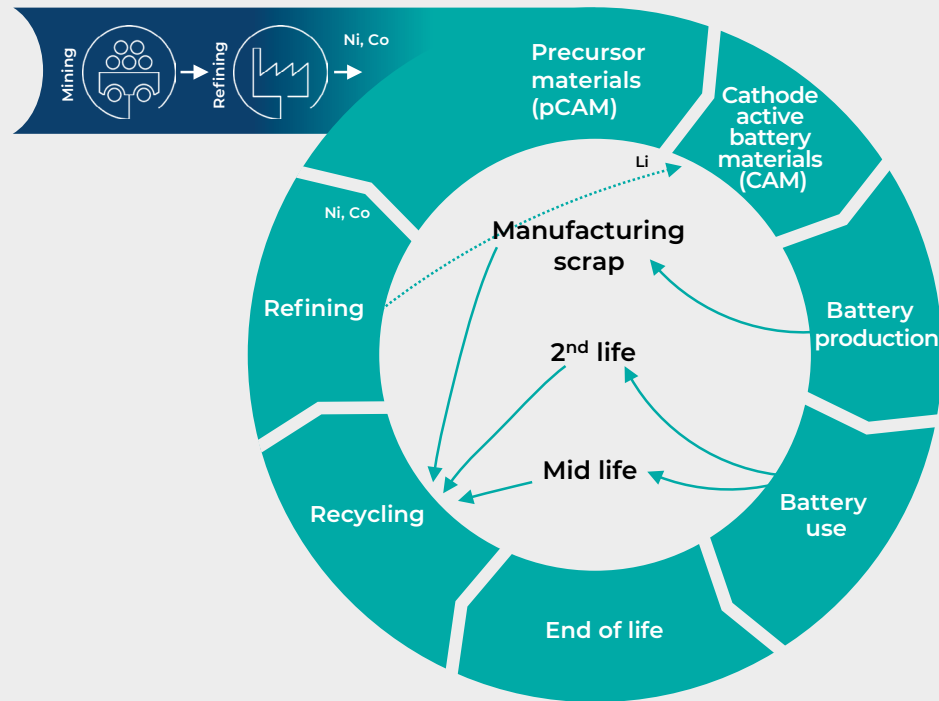
²³ <https://www.iea.org/reports/hydrogen>

²⁴ Table A.27, IEA (2022), World Energy Outlook 2022, IEA, Paris <https://www.iea.org/reports/world-energy-outlook-2022>, License: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

Action Six: Utilising technology to improve resource use efficiency

As both policy and consumer demand drives the move further towards emissions reductions and a circular economy, technological developments are required to meet these ambitions.

As a producer/marketer of metals used in battery production we are seeking to accelerate circularity of critical minerals



There is increasing recognition of the need to increase the use of secondary metals, which our recycling business is well placed to meet.

Our recycling business has grown organically, within different industrial assets, marketing teams and commodity lines.

While experimental in the early days, today our recycling business has evolved from a side interest to an important activity for Glencore. Today our comprehensive recycling business can recover metals such as copper, nickel, cobalt, and several precious metals from a large range of post-consumer and post-manufacturing waste streams. Our climate strategy has put a renewed focus on growing our recycling business.

As one of the world’s largest recyclers of end-of-life electronics and a major recycler of complex secondary copper, nickel, cobalt, gold, silver, platinum and palladium bearing feeds, we play an important role in the circular economy, giving a second life to these commodities, diverting materials from landfill and helping to reduce environmental impacts. Recycling uses significantly less energy, for example, 80%-90% for copper, than mining and smelting primary metal. Scrap currently accounts for about a third of the roughly 30 million tonnes of annual global copper supplies.

In the 1980s, our Horne Smelter in Canada became one of the first smelters in the world to pioneer the recovery of copper and precious metals from discarded electronics. Globally, e-waste scrap is one of the fastest growing waste market category through growing demand and shorter lifecycles for items such as cell phones and tablets. Our recycling business has recycled more than one million tonnes of electronic scrap since the 1990s.

Our Sudbury Integrated Nickel Operations in Canada began recycling in 1990. Initially, the facility processed super-alloy scrap from the aerospace sector, before expanding to include other materials, such as lithium-ion batteries. Today, it processes secondary feed including end-of-life materials, production scrap and recycle streams making it one of the largest processors of complex secondary nickel and cobalt bearing feeds in the world.

Our Sudbury Integrated Nickel Operations recover nickel and cobalt from discarded lithium-ion batteries. In the past, much of this recycle stream was from consumer electronics and other small format batteries. However, going forward we expect more large format batteries used in EV and energy storage systems (ESS). The growing EV market and its associated gigafactories are creating a need to recycle battery manufacturing scrap, as well as end of life EV and ESS batteries, which we anticipate will continue to accelerate in the future.

As part of our net zero ambition, and with a goal to expand our recycling footprint across the commodity complex, we are looking to invest in capacity expansions in our core markets of Europe and North America, as well as to enter new markets that currently lack formal and responsible recycling outlets for end-of-life materials.

Action Six: Utilising technology to improve resource use efficiency *continued*

Case Study: expanding our recycling business

We continue to invest in increasing the capacity of our recycling business, while looking for new growth areas through strategic partnerships and investment.

We are targeting a step change in our recycling capabilities over the next five years through building a larger global footprint and increasing capacity in our core and new markets. We are also testing new technologies which would allow us to recycle more complex materials in a safe and responsible manner.

One such opportunity is at our Britannia Refined Metals (BRM) operation in the UK. BRM operates the largest lead production plant in Europe and is one of only two companies worldwide registered by the London Metal Exchange to produce lead at a quality of 99.995%, the industry's highest recognised standard. This lead quality paired with BRM's ability to produce lead alloys to customer specifications makes BRM a preferred supplier to European sea cable manufacturers for cables connecting offshore wind farms to the mainland.

We are working to repurpose parts of BRM and adding a new recycling stream. We are building a sampling plant for electronic scrap (e-scrap) derived from domestic e-waste collection and recycling. E-scrap is one of the fastest-growing waste categories in the world, driven by both growing demand and shorter life cycles for items such as cell phones and tablets. And through the growth of the EV market, with more giga factories being built around the world, the need to recycle those batteries will continue to accelerate.

The e-scrap recycling plant aims to develop a domestic solution, through leveraging over two decades of experience, for responsibly recycling UK-originated e-scrap. The e-scrap plant is being built with solar roof panels. These panels will replace a portion of BRM's purchased energy, which is currently electricity from renewable sources, predominantly from offshore wind. The intent is to operate on 100% renewable energy.

The e-scrap recycling plant is being constructed in 2023, with the processing of first material currently expected in 2024.

During 2022, our recycling business recovered:

Source	Commodity	Amount
Recycling business of the copper department – recycling electronic scrap and other recycling feeds, such as copper residue from end-of-life automobiles, copper from lithium-ion batteries, carbons from gold mines, copper scrap, plating residue, etc	Copper	30,500 tonnes
	Gold	107,000 ounces
	Silver	1.35 million ounces
	Palladium	13,000 ounces
	Platinum	4,000 ounces
Recycling within our nickel department – recycling secondary nickel- and cobalt-bearing materials, such as super alloy scrap, black-mass from lithium-ion batteries, plating residue, etc.	Nickel	6,200 tonnes
	Cobalt	1,500 tonnes
	Copper	1,200 tonnes

Working in partnership

We are one of the founding members of the World Economic Forum's Circular Economy Partnership, the first private sector alliance for circular electronics. This partnership promotes and facilitates us as a smelter and refiner to speak directly with electrical original equipment manufacturers (OEMs) in the consumer electronics sector. In the absence of this partnership, these two parties might have little reason to connect as we sit at opposite ends of a linear commodity supply chain. Now, through this value chain cooperation, we sit next to each other and have conversations on how to design for circularity.

In May 2022, we announced a partnership with Li-Cycle to advance circularity in battery raw material supply chains. Li-Cycle is a lithium-ion battery recycler in North America and a preferred partner for Glencore in this sector. Glencore and Li-Cycle have entered into a series of key commercial arrangements under which Li-Cycle may jointly source feedstock and recycle it via Li-Cycle assets, with Glencore marketing the battery grade output.

Action Six: Utilising technology to improve resource use efficiency *continued*

In addition to this strategic partnership with Li-Cycle, Glencore, via its own recycling, marketing and industrial businesses as well as other current and future partnerships, intends to support the combination of primary and recycled battery raw materials to help OEMs to close the loop locally and at scale.

We are working on establishing regional circularity platforms across the world to localise battery raw material supply chains within key regions in a scalable manner enabling partners to connect to these platforms. Localising circular ecosystems reduces the distances that scrap and waste needs to travel to be recycled and eventually refined into battery grade products, which in turn contributes to a lower carbon footprint.

We expect that production of battery-grade end products from primary and recycled battery raw materials will assist global EV producers in meeting their stated targets and future regulatory requirements in respect of minimum recycled material content and guarantees of origin for raw materials that they use. This is expected to be facilitated through the intended localisation of supply chains and increasing recycled content in battery raw materials over time. In Europe, Glencore will work to assess the feasibility of utilising our existing industrial asset footprint with a view towards possibly re-purposing some of our industrial assets to play a role in such a circularity platform.

In September 2022, we entered into an offtake agreement with Lohum Cleantech to supply specialty chemicals for the battery supply chain, including sulphates, carbonates and oxides of various metals extracted from spent lithium-ion batteries and other sources. The five-year agreement comes into effect from 2023.

In November 2022, we announced a new initiative at our Britannia Refined Metals refinery in the UK; see case study on page 44.

In December 2022, we signed an inter-continental offtake agreement with ACE Green Recycling, a global recycling technology and supply chain platform. The 15-year agreement allows Glencore to purchase up to 100% of ACE's products from four of its planned lead-acid and lithium-ion battery recycling parks being built in the US, India and Thailand. The parks are expected to be complete by 2024. Once operational, ACE estimates that these recycling parks will cumulatively produce 1.6 million tonnes of recycled metals or specialty chemicals for the battery supply chain containing lead, lithium, nickel and cobalt.

Action Seven: Transparent approach

Through regular, clear and accurate disclosure of our actions to reduce emissions, we can support the understanding of our performance and progress, as well as set out how policy and technology developments create opportunities and risks for our portfolio.

We engage with a broad range of stakeholders on climate-related topics, recognising their interest in our contribution to climate change mitigation and the exposure of our business to various climate-related risks and opportunities.

Public policy advocacy

We believe that it is appropriate that we take an active and constructive role in public policy development, either directly or indirectly through our membership of industry organisations. Evolving regulatory developments and scrutiny of our advocacy activities require that we hold consistent positions on policy.

We communicate these positions both directly through our engagement with government representatives and policy makers, as well as through the industry organisations in which we hold membership.

During 2022, we participated directly in public consultations, as well as through our memberships in industry organisations' working groups that provided submissions as part of public policy development processes. Where available, our responses are on our website at [Glencore.com/publications](https://www.glencore.com/publications).



Action Seven: Transparent approach *continued*

In 2022, our participation included:

Organisation/issue	Purpose	Activities during 2022
Commodity demand and use		
High-Level Advisory Group for the IEA report Coal in Net Zero Transition Glencore representative: Gary Nagle	Established by the International Energy Agency (IEA) to provide advice to the IEA on its analysis on the role of coal in the transition to net zero.	Glencore was invited to participate in the advisory group alongside other industry, government and finance representatives. The advisory group provided guidance and feedback on the report, which is intended to support policymakers in reducing emissions from coal while supporting energy security and economic growth.
Australian government price cap on domestic gas and coal	New federal and state legislation to temporarily (12 months) cap the domestic price of gas (A\$12 a gigajoule) and coal (A\$125 a tonne of thermal coal) as part of the government's response to try to stem rising costs of energy for manufacturers and households.	We were involved in direct and indirect engagement (via industry organisations) with state and federal government ministers and public officials on the merits of different policy options and practical implementation.
Queensland government	<p>In Australia, both state and federal governments are actively engaged in policy reform to support decarbonisation and the broader transition to a low emission future. Hydrogen has been identified as a key policy priority and enabling technology.</p> <p>To this end, Glencore has been proactively engaged in discussions with government around policy design elements to support greater integration of hydrogen based energy and products in Australia.</p>	<p>During the year, we spoke to the Queensland government regarding our Surat Hydrogen Project. While the Surat Hydrogen Project is still in early pre-feasibility stages of development, we are engaging with government to ensure that the future legislative framework for hydrogen also considers blue hydrogen and commercial scale CCS.</p> <p>As part of this process it is common practice to amend or update existing legislation to keep pace with the emergence of any new technologies. We suggested amendments to Queensland legislation to facilitate the transportation of hydrogen and ammonia in pipelines and commercial scale storage of CO₂. If the project proceeds it will be subject to a broad range of regulatory and environmental studies and broad stakeholder engagement processes. Subject to final approvals and final investment decision, a commercial scale blue hydrogen project with CCS located in Wandoan could provide a range of socio-economic opportunities for the surrounding region. We welcome further engagement with all stakeholders on this project.</p>
Recharge Participation in its working groups on EU regulations, UN waste transportation and LCA and PEF for batteries.	Recharge is developing the Product Environment Footprint Category Rules (PEFCR) for rechargeable batteries, as part of the EU's Environmental Footprint pilot phase.	Our participation in these working groups contributes to the development of rules for future legislation affecting participants in the rechargeable batteries value chain in the EU.
Various industry organisations	Guiding EU battery regulation	Supported advocacy activities via contributing to the development of position papers and briefing notes.

Action Seven: Transparent approach *continued*

Emissions management		
Safeguard Mechanism (SGM), Australia	The Australian government is reforming the SGM to enhance emissions baselines predictably and gradually over time for facilities already covered by the SGM, on a trajectory consistent with achieving a 43% emission reduction target by 2030 and long-term ambition of net zero by 2050.	We lodged a public submission to the initial consultation paper released by the Australian government. We supported the Mineral Council of Australia's advocacy activities, details available on page 52.
Eurometaux Study letter to European Commission	Glencore was a signatory to the letter sent by the CEOs (general managers of European operations) of energy intensive industries.	The letter sets out concerns relating to developments of the Emissions Trading System and the planned introduction of the Carbon Border Adjustment Mechanism and the need to consider the current energy situation while properly planning for the future.
Energy Council South Africa	A new consumer body that seeks to present a unified voice and contribute to generating a national energy vision and approach to net-zero and the Just Transition.	Glencore has been accepted as a member, which will involve our South African coal and ferroalloys businesses on power and storage and our Astron Energy crude oil refining business with regards to hydrogen, liquid and sustainable fuels.
Energy security		
Business Unity South Africa (BUSA)	A business forum to develop positions on various topics.	As a member of BUSA's energy sub-committee, we contributed to the development of formal positions on matters such as the Eskom tariff escalations and the regulator NERSA's attempts to restructure the pricing methodology for electricity, as well as supporting BUSA's input into the National Economic Development and Labour Council work on energy security, climate change and the Just Transition.
Energy Intensive User Group (EIUG)	An advocacy group in South Africa, mainly for energy intensive consumers.	We contributed to EIUG's work with Eskom on the immediate and growing energy deficit in the country, on what can practically be done to minimise the impact of the energy deficit on energy intensive sectors and the economy. With a strong technical background, the group worked with Eskom to highlight aspects of generation, transmission and distribution that require attention and strongly lobbied government departments on the need for appropriate cohesion across industry and the electricity supply sector to ensure the greatest possible level of energy security, stability of pricing and a clear forward path on pricing and policy, all within a Just Transition framework. With key large energy intensive multi-nationals as members, a strong emphasis has been on the need for rapid decarbonisation of energy supply in South Africa.
South African government and Eskom		We had direct engagement on electricity supply security.
Climate-related disclosures		
International Sustainability Standards Board (ISSB)	The ISSB is establishing comprehensive sustainability-related disclosure standards that provide capital market participants with information about companies' sustainability-related risks and opportunities to help them make informed decisions.	We submitted a response to the consultation paper on Standard 2: Climate.
UK Transition Plan Taskforce (TPT)	Developing a standard for private sector climate transition plans in the UK.	We provided feedback on the TPT's framework for transition plans.

Action Seven: Transparent approach *continued*

We are actively participating in reviews that support the development of the recommendations for the Task Force for Nature-Related Financial Disclosure (TNFD). We have also incorporated various draft elements, such as the TNFD's Locate, Evaluate, Assess, Prepare (LEAP) risk process into our environmental governance framework for implementation at our industrial assets.

Each year, we undertake an assessment of both our direct and indirect lobbying on climate-related topics and evaluate any statements, both internally generated and/or made by an external organisation in which Glencore is a member, against alignment with our support for the goals of the Paris Agreement (Article 2). Our approach improves our understanding of the positions and advocacy undertaken on climate change by our industry organisations. We publish an annual review of our findings regarding our own statements, as well as the positions taken by our industry organisations.

Our 2022 review of our direct and indirect lobbying on climate-related topics is available on pages 51 to 55.

Engaging with our shareholders

We recognise the importance that many of our shareholders attach to climate change and their desire to have the opportunity to advise us on our efforts. Since 2021, in response to this interest, we have provided our shareholders with an advisory vote on our three-yearly climate action transition plan and its annual progress updates, which detail our progress in delivering our three-year plan in relation to our emission reduction targets and longer-term ambition of net-zero.

At our 2022 AGM, 76.28% of our shareholders voted in favour of our 2021 Climate Progress Report. Following this vote, and in accordance with Provision 4 of the UK Corporate Governance Code, we undertook a consultation with shareholders. In response to the recommendations received, we resolved to take various actions, including to enhance disclosures regarding our planning and progress around the execution of our climate strategy and provide more detail on our Board and management governance of climate matters. These disclosures have been included in the following sections of this progress report:

- Governance
- Just Transition
- Comparison with IEA 2022 Net Zero Emissions 1.5-degree CO₂ emission pathways

- Managing our operational footprint
- Managing methane
- Responsible decline of our coal portfolio
- Allocating capital to prioritise transition metals
- Review of Industry Associations

Aligning with TCFD recommendations

We recognise the importance of transparently reporting on our approach with respect to managing climate change within our business and progress towards delivering our targets and ambitions.

We were an early supporter of the voluntary guidance on consistent climate-related financial disclosures produced by the Taskforce on Climate-related Financial Disclosures (TCFD). We are pleased to support the TCFD guidance and align to its recommendations in our annual reporting.

We note that the UK has introduced reporting requirements to make disclosures against the TCFD mandatory for companies that fall into scope. We believe this approach drives greater consistency in reporting on climate-related risks and opportunities and enables increased comparability between companies. We have structured our climate reporting according to the TCFD recommendations since 2017, taking steps each year to provide greater granularity of content.

Our 2022 TCFD-aligned disclosures are available in our *2022 Annual Report* on pages 24 to 42.

Additional information

We publish several publications covering a range of ESG topics:

Updated topic	Public disclosures								
	Annual Report	Sustainability Report	Modern Slavery Statement	Payments to Governments Report	Climate Report	Ethics & Compliance Report	Annual VPs Report	Water Microsite	TSF Microsite
Climate Change	●	●	○	○	●	○	○	○	○
Water	●	●	○	○	○	○	○	●	○
Land Management	●	●	○	○	○	○	○	○	○
Biodiversity	●	●	○	○	○	○	○	○	○
Diversity, Equity & Inclusion	●	●	●	○	○	○	○	○	○
Social Performance	●	●	●	○	○	○	○	○	○
Catastrophic Hazards (incl. Tailings Dam Management)	●	●	○	○	○	○	○	○	●
Occupational Health	●	●	○	○	○	○	○	○	○
Workforce Safety	●	●	○	○	○	○	○	○	○
Ethics & Compliance	●	○	○	○	○	●	○	○	○
Transparency	●	○	○	●	○	●	○	○	○
Responsible Sourcing	●	●	●	○	○	○	○	○	○
Human Rights	●	●	●	○	○	○	●	○	○
Indigenous People	●	●	●	○	○	○	●	○	○
Just Transition (emerging topic)	○	●	○	○	●	○	○	○	○

● Detailed information available

● High-level information available

○ No information available

Energising today Advancing tomorrow

2022 Review of industry organisations



2022 Review of industry organisations

We monitor both our direct and indirect lobbying on climate-related topics and evaluate any statements, both internally generated and/or made by an external organisation in which Glencore is a member, against alignment with our support for the goals of the Paris Agreement (Article 2).

As stated in our public *Group Political Engagement Policy*, we monitor the alignment between our direct advocacy as well as the positions on climate change taken by external organisations in which Glencore is a member and our support for the goals of the Paris Agreement (Article 2). We undertake an additional review of organisations in regions or commodities that are material to us.

At a global, national and local level, we participate in a broad range of industry organisations. In some organisations, we take a leadership role, through holding a position on its board, or other governing body, while in others, we are active participants in working groups, in person meetings and collaborative efforts.

Through our industry organisation memberships (a full list is provided in *Appendix Three: Industry organisations*), we can play an informed and constructive role in the public policy development process and participate in discussions on issues related to clean energy, carbon reporting and carbon pricing.

We believe that industry organisations, through their membership, can act as a catalyst to bring about sustainable improvements to the extractive sector, which, in turn may generate positive benefits for economies and society. They provide a platform for debate, understanding differing views and achieving consensus to deliver a consolidated and consistent industry opinion.

Participation provides an opportunity for us to understand better the topics affecting our industry, as well as to share practical examples and become informed of best practices. The industry groups use shared resources of member companies to conduct research, enhancing the scientific knowledge base over time. We can also contribute to the development of regulation and industry standards.

As part of our annual assessment, we review the opinions and public statements made by the industry organisations in which we are members. We also consider the purpose of the organisation and the value that it creates for Glencore at a local, national and Group level, as well as its engagement activities and advocacy work.

We recognise that, in some instances, our position (see *Appendix One: Our positions on climate change*) may not fully align with those of the industry organisation and/or its other members. Where we identify misalignment between our and the organisation's public position, we first engage with the organisation's executive team to understand the alternative views that drove the adoption of a position. In regions or commodities that are material to us, we generally try to take a leadership role within the organisation to shape its direction and influence its positions. Where differences cannot be reconciled, despite our best efforts, we would look to terminate our membership.

Membership fees

A full list of the industry organisations to which Glencore belongs is detailed in *Appendix Three*. For each of these industry organisations, we pay annual fees. Organisations calculate their fees as a fixed amount for all members or as a proportion of the annual revenue or production volumes. Generally, industry organisations do not assign membership fees to a particular purpose or activity. On some occasions, we may pay additional fees for one-off projects.

During 2022, the organisations to which we paid fees of or above \$100,000 are:

Organisation	US\$
International Copper Association	2,486,780
Minerals Council of Australia	2,345,128
Nickel Institute	1,468,445
Cobalt Institute	1,073,611
Queensland Resources Council	680,637
NSW Minerals Council	660,846
International Zinc Association	560,000
Minerals Council South Africa	527,061
ICMM	508,000
Sociedad Nacional de Minería, Petróleo y Energía - SNMPE (Perú)	374,116
International Lead Association	286,500
Vanitec	172,000
Colombian Mining Association	170,000
Mining Association of Canada	163,000
Association Minière du Québec	160,000
Vanadium Consortium	132,577
National Chamber of Entrepreneurs, Kazakhstan	131,839
Chamber of Minerals and Energy of Western Australia	122,473
Chile Mining Council	120,000
South African Petroleum Industry Association	110,375
Ontario Mining Association	100,000

2022 Review of industry organisations *continued*

2022 Annual review process

Our annual review considers the degree to which Glencore's and our industry organisations' positions and activities relating to climate change and energy align with our climate change position and the goals of the Paris Agreement (Article 2). We also seek to ensure that these positions express support for the United Nations Sustainable Development Goals (UN SDGs).

In line with previous years' reviews, there are three regions/countries where climate change continues to be a key driver in regulatory development: Australia, Europe and South Africa. Within these jurisdictions, we have undertaken direct and indirect advocacy and engagement activities. We have disclosed our climate-related engagement activities in *Action Seven: Transparent Approach* on pages 47 to 48.

Our assessment of our industry organisations began with confirming those in which we hold membership, see *Appendix Three: Industry organisations*, the key Glencore contact and the membership fees paid.

We conduct in-depth reviews, including interviews, with industry organisations in regions with material climate-related regulatory developments. This year, in response to feedback, we also assessed our industry organisations against the ratings produced by InfluenceMap, a rating agency used by many in the institutional investor community. InfluenceMap grades associations on a scale from A to F based on their view of the advocacy activities. We added to our review those organisations that received a score of D or lower by InfluenceMap, i.e., those that InfluenceMap assesses to be obstructive of climate-related policy engagement:

Australia	Minerals Council of Australia	E+
	Chamber of Minerals and Energy of Western Australia	E+
	NSW Minerals Council	E-
Europe	Queensland Resources Council	E
	Eurometaux	D
South Africa	Verband der Chemischen Industrie (VCI)	D
	Minerals Council of South Africa	D+
	South African Petroleum Industries Association (SAPIA)	D

Our membership in Verband der Chemischen Industrie (VCI) is held by our Nordenham zinc smelter in Germany. As this smelter is currently on care and maintenance due to high energy prices in Europe, we have not engaged with VCI.

For all the organisations reviewed, we confirmed their commitments to the goals of the Paris Agreement (Article 2), and that these are reflected in their advocacy activities. While further details of our assessment are provided below, we generally found the ratings to reflect media headlines and not to take account of organisations' public positions or 'behind-the-scenes' activities, such as meetings with government representatives, working group activities, participation in consultation on policy development, etc. We support our industry organisation' continued engagement with InfluenceMap to share information about their activities.

Australia

During 2022, the Australian government announced proposed reforms to its SafeGuard Mechanism (SGM) and to impose a domestic coal and gas price cap.

The SGM requires entities to keep their net emissions below an emissions limit (a baseline). The Australian government is proposing to gradually reduce baselines to help Australia reach net zero emissions by 2050, introduce credits for facilities that emit less than their baseline, and provide tailored treatment to emissions-intensive, trade-exposed facilities so businesses are not disadvantaged compared to international competitors and emissions do not increase overseas.

New federal and state legislation was introduced to temporarily (i.e., for 12 months) cap the domestic price of gas (A\$12 per gigajoule) and coal (at A\$125 per tonne of thermal coal) as part of the government's response to try and stem rising costs of energy for manufacturers and households.

Glencore participated in the consultation on revisions to the SGM directly, and we continue to monitor and engage with the government as it looks to finalise the mechanism, which is available on our website.

Minerals Council of Australia (MCA)

Glencore is a member of the MCA, which is the leading advocate for the minerals industry in Australia across a range of public policy topics including climate change, First Nations partnerships, sustainability and economic reform. In 2021, the MCA members committed to an ambition of achieving net zero by 2050.

The MCA recognises that it cannot have a 'one size fits all' approach to climate change

matters due to the diversity of its membership. However, through its Energy and Climate Committee, which Glencore co-chairs, MCA developed and published a Climate Action Plan (CAP) in 2021, www.minerals.org.au/climate-action-plan, and in 2022 published an annual progress report against this plan.

The CAP clearly states MCA's commitment to the Paris Agreement and its goal of net zero emissions, focusing on technology, transparency in reporting and knowledge sharing. The CAP notes the transition to a lower emissions future is a global undertaking of major technological, economic and social challenge in which Australia and the minerals sector must play their part. The CAP calls for a stable national policy framework to support rapid action to achieve an ambition of net zero emissions in Australia.

In addition to the development of the CAP, the MCA has promoted industry-wide adoption of the TCFD reporting framework. It also endorsed Towards Sustainable Mining, a standard developed by the Mining Association of Canada, as mandatory for all its members, including the development of climate targets.

The MCA's submission to the government's public consultation on the SGM recognises and supports the government's new climate targets. The submission expresses concern around the current proposal's impact on jobs and economic growth, as some facilities - irrespective of the commodity - may be exposed to high compliance cost risk as the proposed changes could leave the carbon market attractive to speculators. The MCA has ongoing engagement with the government as it considers options to address high energy prices.

2022 Review of industry organisations *continued*

Chamber of Minerals and Energy of Western Australia (CME)

The CME represents the resource sector based in Western Australia in state and national policy developments. It also promotes the value of the sector to the community and provides a platform for its members and interested stakeholders to collaborate. We are members of the CME through Minara Resources, the operator of our Murrin Murrin nickel mine in Western Australia (WA).

The CME's Climate and Energy Reference Group leads its policy development on climate, GHG emissions and energy-related issues impacting the resources sector. The CME supports the goals of the Paris Agreement (Article 2).

During the year, the CME made two separate submissions as part of the SGM consultation process. These submissions set out its support for the SGM and the merits in progressing reform opportunities. It recommends the SGM consider the use of international offsets and the inclusion of Australian carbon credit units or SGM credits for carbon removal projects. The CME also recommends government support for programmes that incentivise acceleration in abatement technology development.

The CME has identified an opportunity to work collaboratively with stakeholders to establish WA as a domestic user, producer, and exporter of competitive, low-cost, reliable and low emissions hydrogen. It recognises that different types of hydrogen production technologies have different emissions profiles, and, as such, the CME focus is on the production of hydrogen that is technology and colour agnostic.

NSW Minerals Council

The NSW Minerals Council is the industry association for the state's minerals industry. It supports an effective regulatory framework in which the industry can operate competitively and make a meaningful contribution to the state and the people of NSW.

The NSW Minerals Council supports policy frameworks that are consistent with agreed international frameworks, including the United Nations Framework Convention on Climate Change, and with achieving the NSW and Australian government target of net zero emissions by 2050.

As the development of climate policy tends primarily to take place at a federal level, the NSW Minerals Council's advocacy work tends to focus on its members' projects, including both coal and transition metals sites, and highlighting the contribution of these operations to the region.

The NSW Minerals Council made a statement on proposed changes to coal export taxes, noting that this would not change domestic energy prices.

Queensland Resources Council (QRC)

The QRC represents the commercial developers of Queensland's minerals and energy resources. Its Energy Policy states support for the goals of the Paris Agreement (Article 2). We participate in the QRC through our Mount Isa operations. Our coal operations are not represented in the QRC.

The QRC's primary advocacy activities are engaging with Queensland state government and supporting the Queensland Development Plan, which encourages decarbonisation in the extractive sector. The QRC participates in the state's Ministerial Council on Energy, with a 70% renewables target by 2032.

The QRC has undertaken engagement on coal taxes, advocating for a stable and predictable regime, including local government rates and royalties paid to the state government.

Europe

The European Union's climate-related regulations that affect our sector notably include the emissions trading system (ETS) reform, energy and environmental state aid guidelines (EEAG) and the carbon border adjustment mechanism (CBAM).

The ETS is a key tool for reducing industrial carbon emissions. A robust ETS reform is vital for improving the investment conditions for Europe's most efficient companies and delivering the goals of the Paris Agreement (Article 2).

The EEAG regulates state aid provisions in support of projects for environmental protection and adequate energy generation, while addressing competitive distortions in the European market. It is currently being revised to align with the European Green Deal objectives. The metals processing sector depends on access and availability of low carbon/carbon neutral electricity at globally competitive costs, given the electricity-intensity of its activities. The EEAG State Aid ensures that this challenge is overcome, and the industry remains competitive in its energy transition.

The objective of CBAM is to prevent the risk of carbon leakage within some sectors, starting with aluminium, cement, iron and steel, fertilisers and electricity. It is designed to ensure that the price of imports reflect their carbon content.

2022 Review of industry organisations *continued*

Glencore's advocacy in the European Commission and with European national governments is mostly through industry organisations. These organisations actively engage on European Commission policy development. In addition, we also hold memberships in several organisations that focus on achieving product compliance with the European Commission's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) registration.

Eurometaux

Glencore is a member of Eurometaux's Executive Committee and participates in its task forces and working groups. Through its outreach activities with regulators and institutions and environmental and other advocacy groups, Eurometaux contributes to the positioning of the European non-ferrous metals industry and its products as essential, innovative and sustainable components of European society.

Eurometaux advocates that industry needs the right framework in which to deliver the European Union's climate neutrality goals. During the year, Eurometaux's engagement has been to highlight policy weaknesses.

On the energy crisis in Europe, Eurometaux takes a solution-oriented approach. It advocates for increasing renewable energy use, noting that this needs time to be developed and built. In the interim, subsidies should support business until sufficient grid flexibility and storage infrastructure is established. Long-term supply contracts will support investment in renewable energies.

As metals are generally energy-intensive to make, producers currently face high carbon costs from the ETS that cannot be passed onto customers. Eurometaux believes that the ETS needs to fully compensate those companies who have made efficiency investments and are demonstrating further innovations to maintain their international competitiveness.

As part of the EEAG reforms, Eurometaux is seeking an industry-friendly competition framework that supports the European Union's decarbonisation objective, while maintaining a competitive industrial base. It is asking the European Commission to consider keeping existing support for electro-intensive businesses, extending this support to cover indirect emissions and ensuring support for recycling activities.

Eurometaux does not see the proposed CBAM as being sufficient to deliver global emissions reduction. For example, it will not prevent (or penalise) producers in some jurisdictions utilising renewable energy for their exports to Europe, and fossil fuels for their domestic products.

Eurometaux has raised concerns that CBAM does not address the high indirect carbon costs faced by non-ferrous metals producers through their national electricity prices. Further, it asks that current indirect carbon cost compensation is maintained to keep companies competitive, whereby some companies without compensation in the current environment, would unlikely survive, impacting jobs and payments to governments.

Eurometaux is a member of RE-Source, an alliance of stakeholders representing clean energy buyers and suppliers. RE-Source provides a platform to share resources and coordinate activities to promote a better framework for corporate renewable energy sourcing at European Union and national level.

South Africa

In 2022, the South African government published "A Framework for a Just Transition," to drive South Africa towards a zero-carbon economy through initiatives that support the country's national development, through ensuring decent work for all, social inclusion and the eradication of poverty.

The Presidential Climate Commission (PCC) developed the framework in collaboration with various stakeholders, including those most impacted by the transition. The Framework identifies the key areas that are necessary to create an equitable transition: reskilling and upskilling workers to seize the opportunities of a green economy; and building economic clusters to create new jobs and replace jobs where they may be lost.

Minerals Council of South Africa (MCSA)

We are a member of the MCSA and hold a seat on its Environment Sub-Committee. MCSA's Climate Change Statement sets out its commitment to the goals of the Paris Agreement (Article 2). It is developing a Net Zero 2050 Action Plan and collaborating with the National Business Initiative on a least-cost pathway.

In 2022, the MCSA took part in various policy discussions on South Africa's climate change policy response measures, including carbon markets and pricing mechanisms such as carbon budget and carbon tax. The MCSA is mandated by members to play a constructive role in engaging policy makers

on implementing policies that are pragmatic and that help enable the just transition towards a low carbon economy.

During the year, the MCSA conducted a review of members' performance, and commissioned the development of Guidelines on Climate Change Action Plans and Strategies, in which we participated. The Guidelines aim to provide a practical support to members to develop their own climate change plans and strategies.

The MCSA's engagement with government has focused on promoting stronger alignment between different components of climate-related policies, providing greater clarity (for instance, the lack of a holistic framework of incentives, penalties, and mitigation for carbon, significantly raises the risk of noncompliance and taxes being merely seen as revenue stream rather than a measure to transition the South African economy to a low carbon trajectory) and encouraging promotion of innovation. The MCSA has supported the carbon tax mechanism but recognises that an extension of the implementation timeline is needed to enable the government to be well prepared for the next phase.

In 2022, the MCSA developed its climate change position, as well as a guideline on implementing its climate change strategy and action plans. As a member of MCSA, Glencore raises matters relating to energy security, chromite smelting and the production of coal for sale into domestic (electricity) and export markets, along with contributing to the development of the MCSA's climate change and just economic transition positions.

South African Petroleum Industries Association (SAPIA)

SAPIA represents the South African liquid fuels industry to promote inclusive social and economic growth. Some of our Astron Energy employees participate in SAPIA's working groups, including Astron Energy's CEO, who chairs SAPIA's Economic Regulation Committee.

Through our SAPIA membership, Astron Energy participated in dialogues and meetings with government on climate change, carbon tax, biofuels and the recent Clean Fuels 2 regulations.

In 2022, SAPIA published its climate change position paper, which was developed with inputs from its membership and recognises the goals of the Paris Agreement (Article 2).

Through its membership of Business Unity South Africa (BUSA), SAPIA participates in BUSA's monthly energy committee and gas committee meetings. The energy committee includes renewable energy companies, whose focus is on electricity supply.

SAPIA is also a member of the National Business Initiative (NBI). During the year, the NBI commissioned a pathway to 2050 net zero economy. SAPIA is also involved in the PCC's work on just transition, partly funded by the support received post COP26. SAPIA's focus is on a just transition in transportation, recognising the existing electricity supply challenges from a predominantly coal-based generation mix and that the current cost of electric vehicles limits market demand in South Africa.

While SAPIA is not a member of the recently established Energy Council of South Africa, some of its members are, providing an opportunity for SAPIA to contribute to the Council's workstreams. The Council is working on developing a holistic energy strategy for the country that includes electricity, gas and liquid fuels.

Findings

We consider the industry organisations we reviewed to engage on issues that are relevant to our industry or operating region, and to contribute to supporting the goals of the Paris Agreement (Article 2). Our review of these organisations' publications and positions, and our interviews with staff have not identified material misalignment between our positions on climate change and the advocacy activities taken by our industry organisations. As such, we do not currently intend to change our memberships.

Energising today Advancing tomorrow

Additional information



Appendix One: Our positions on climate-related topics

Adaptation infrastructure

We recognise that climate change and its physical impacts may create operational risks for our industrial assets.

We regularly review and analyse high-level climate change trends and their potential to affect our operating regions. Where relevant and possible, we undertake mitigation and management measures.

To deliver a strong investment case to our capital providers, we recognise the need to invest in assets that are resilient to regulatory, physical and operational risks related to climate change.

Carbon capture and storage (CCS) and high-efficiency, low-emission (HELE) technology

We support climate and energy policies that reduce global GHG emissions in the most cost-effective manner, whilst ensuring energy security. Our preference is for policy makers to adopt a pragmatic, technology-neutral approach that supports the United Nations Sustainable Development Goals, including universal access to affordable energy.

Greater policy parity between renewables and HELE and CCS technologies will be required. Deployment of HELE technologies, particularly in developing economies, which will continue, in the near and medium term, to rely on fossil fuels for secure baseload power generation, offer a compelling case for achieving material emission reductions, while still being able to achieve socio-economic development goals.

HELE and CCS have the potential to deliver material emission reductions from the global energy complex; CCS is also applicable to synthetic fuel production and other industrial processes.

We are investing in emission reduction projects and initiatives, focusing on both our industrial operations and the use of our industrial products, as well as supporting low-emission coal technology projects and GHG-related studies to address Scope 3 emissions.

Carbon Offsets

We support the use of carbon credits to offset residual emissions. Glencore will consider the business case for both generating and utilising carbon offsets as part of its climate change strategy, in particular, in relation to offsetting our residual emissions to meet our 2050 net zero ambition (after prioritising emissions reductions).

Carbon pricing

Our business continues to operate successfully in multiple jurisdictions that have direct and indirect carbon pricing or regulation. We consider carbon price sensitivities as part of our ongoing business planning for existing industrial assets, new investments and as part of our marketing activities.

We play a constructive role and proactively engage with policy makers throughout the public policy development process from initial design through to implementation and compliance. Pricing carbon should be part of an informed and considered process to provide market signals to drive the behaviours and incentivise investments that deliver the least cost approach to emissions reductions. Carbon pricing mechanisms should support predictable long-term pricing and avoid carbon leakage, as well as enable consistent jurisdictional approaches.

Circular economy

We recognise the role of a circular economy in reducing the carbon footprint of metals and minerals. We are committed to increasing our engagement into the circular economy by leveraging our commercial knowledge and physical presence.

Climate science

We recognise the global climate change science as laid out by the Intergovernmental Panel on Climate Change (IPCC). This broad consensus among nation states will drive a global shift towards a low-carbon economy, supported by appropriate policies and bring significant economic changes.

Emissions reduction and targets

We openly and transparently disclose our emissions footprint. In 2017, we announced our first target of reducing our industrial Scope 1 and 2 emissions intensity by 5% by 2020 compared to a 2016 baseline. In late 2020, we published our climate change strategy, *Pathway to Net Zero*. This set out our approach to delivering our climate-related targets and longer-term ambition of achieving net zero emissions. In 2021, we further increased our medium-term target from a 40% to a 50% reduction of our emissions by the end of 2035 on a 2019 baseline and introduced a shorter-term target of a 15% reduction of our emissions by the end of 2026 on a 2019 baseline.

Equal prioritisation of the energy trilemma

We support a least-cost, technology neutral approach to achieving climate change goals that considers the cost and consequences of all available policy options and does not hinder socio-economic development or undermine energy access and security.

Appendix One: Our positions on climate-related topics *continued*

Hydrogen Energy

The transition to net zero will require several technologies to achieve the world's decarbonisation goals.

The IEA has identified hydrogen as playing a role in the decarbonisation of hard to abate sectors, such as heavy industry, shipping, aviation, and heavy-duty transport.

We believe that blue hydrogen produced from fossil fuels with CCS to capture emissions from the hydrogen production process, could play an important role in the transition towards net zero.

Blue hydrogen and by-products, like ammonia with CCS, offer an approach for decarbonising existing industrial processes and the ability to utilise existing energy resources.

Just Transition

Just Transition speaks to an equitable and inclusive process to navigate and address the social and economic risks and opportunities faced by a range of stakeholders that will emerge because of the global transition to low carbon future. We believe that a Just Transition will be a highly complex process that must be dynamic with the flexibility to respond to evolving policies and socio-economic developments. Society must address the social risks and opportunities from both closure of fossil fuel assets and the expansion of metals used in renewable energy production.

Our approach to a Just Transition takes account of its complexity and our interdependence with other companies and the public sector. Our operating countries face very different transition outlooks, and a successful social transition is dependent on government policy and funding to address widespread and systemic challenges. We have established a set of priorities to guide our localised approach to participating in a Just Transition process.

Land-use change for sequestration

We support a global mechanism that delivers a carbon credit market with stable pricing. We recognise that carbon credits may become a material means to offset our emissions footprint and may have reputational benefits. As such, we are building our understanding of the carbon offset markets and monitoring their developments. In addition, we are investigating opportunities in credible projects with reputational and social benefits, such as reforestation projects.

Public policy

As the global patchwork of energy and climate change regulation evolves, Glencore will continue to monitor international and national developments and play a constructive role in the development of climate change policy across our global business group.

Governments and industry must work together to establish policy frameworks that deliver the optimal balance of social, environmental and economic considerations appropriate for individual nations; this may include pricing carbon as part of a balanced transition to a low carbon economy.

Paris Agreement

We acknowledge the global climate change goals outlined in the United Nations Convention on Climate Change (UNFCCC) Paris Agreement that came into force on 4 November 2016, the ultimate objective of which is to stabilise GHG concentrations at a level that would significantly reduce the risks and impacts of climate change (Article 2, Paris Agreement). Under the Paris Agreement, this is described as keeping the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

We believe that only through collective inclusive action can the world achieve the goals of the Paris Agreement and limit the impact of climate change. The UNFCCC and the Paris Agreement provide that efforts to stabilise GHG concentrations should also enable economic development to proceed in a sustainable manner. We support the UNFCCC's recognition of the critical importance of sustainable economic development and its acknowledgement that measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each country and integrated with national development programmes. We support the principle of equity set out in the Paris Agreement and acknowledge the common but differentiated responsibilities and capabilities of domestic economies (particularly those of emerging markets and developing economies) in the pursuit of climate objectives.

We draw from this principle that the global response to climate change should pursue twin objectives: limiting temperatures in line with the goals of the Paris Agreement, and supporting the United Nations Sustainable Development Goals, including sustained, inclusive and sustainable economic growth, and universal access to clean, affordable energy.

Appendix Two: Performance data

During 2020, 2021 and 2022 external factors including Covid-19 and weather impacts have had a material negative impact on production from our industrial assets, some of which was recovered during 2022, and this has contributed to a non-linear decline of our Scope 1, 2 and 3 emissions. At the end of 2022 and relative to our 2019 baseline, our Scope 1 emissions have declined 2.4 million tonnes or 12.7%, our Scope 2 market-based emissions have declined 0.7 million tonnes, or 6.1%, and our Scope 3 emissions have declined by 135 million tonnes or 28.2%²⁵.

The below table summarises our emissions performance for 2019 to 2022:

Indicator	2019	2020	2021	2022	Change 2022 versus 2019
Scope 1 - Direct emissions (Mt CO ₂ e)	19.0	15.2	15.9	16.6	-12.7%
Scope 2 - Indirect market-based emissions (Mt CO ₂ e)	12.2	10.0	11.4	11.4	-6.1%
Scope 3* - emissions (Mt CO ₂ e)	476.7	354.2	364.7	342.1	-28.2%
Total (Mt CO ₂ e)	507.9	379.5	392.0	370.1	-27.1%

* Sum of Scope 3 emissions reported in categories 1, 3c, 4, 10, 11 and 15.

²⁵ The absolute change and percentages might differ due to rounding issues

Appendix Two: Performance data *continued*

We have restated our 2019 baseline to reflect industrial asset portfolio changes from acquisitions and divestments (as recommended by the GHG Protocol). We have also taken the opportunity to make some changes to the scope of our reporting of Scope 3, categories 10 and 11 emissions, resulting in the inclusion of Scope 3 emissions from coal production volumes under our operational control, and to reflect an updated approach to our emission factors sources and our enhanced market-based emissions intensity methodology. For further information refer to the *About this report* section and our *Basis of Reporting 2022* at [glencore.com/publications](https://www.glencore.com/publications).

Disclosure	Indicator	2019	2020	2021	2022	Comments
Direct (Scope 1) greenhouse gas (GHG) emissions*	Direct emissions (thousand tonnes CO ₂ e)	19,018	15,164	15,946	16,607Δ	The higher Scope 1 emissions are mainly the result of onsite coal fired power generation linked to increased nickel production at Koniambo. For the year ending 2022, we restated our 2019 baseline to reflect industrial asset portfolio changes from acquisitions and divestments (as recommended by the GHG Protocol). For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications .
	Direct emissions by commodity (thousand tonnes CO ₂ e)	19,018	15,164	15,946	16,607	
	- Aluminium	0.03	0.01	0.04	-	
	- Coal	7,561	6,089	5,896	5,764	
	- Copper	1,224	958	1,055	1,157	
	- Ferroalloys	4,112	3,047	4,112	4,148	
	- Nickel	2,892	2,513	2,392	2,993	
	- Oil	835	147	39	123	
	- Zinc	2,393	2,410	2,452	2,422	
	Direct emissions by region (thousand tonnes CO ₂ e)	19,018	15,164	15,946	16,607	
	- Africa	5,470	3,725	4,661	4,698	
	- Asia	1,212	1,269	1,285	1,253	
	- Australia	8,581	7,885	7,380	7,929	
	- Europe	457	432	461	447	
	- North America	772	591	600	575	
	- South / Latin America	2,526	1,262	1,558	1,705	
	Direct emissions by source (thousand tonnes CO ₂ e)	19,018	15,164	15,946	16,607	
	Fossil fuels	9,412	7,235	7,388	8,158	
	- Solid fossil fuels	2,327	1,916	1,736	2,241	CO ₂ e emissions from consumption of coal and coke at our industrial assets.
	- Liquid fossil fuels	5,913	4,579	4,957	5,198	CO ₂ e emissions from consumption of diesel and other oil products at our industrial assets.

Appendix Two: Performance data *continued*

Disclosure	Indicator	2019	2020	2021	2022	Comments
	- Gaseous fossil fuels	1,172	739	694	718	CO ₂ e emissions from consumption of natural gas, refinery gas and other gas-based fossil fuels at our industrial assets.
	Reductants	5,275	4,079	5,093	5,090	CO ₂ e emissions from consumption of carbon-based materials for the chemical reduction of metal oxides.
	Emissions from fossil fuel extraction	3,927	3,455	3,076	2,916	Coal seam emissions from the production of coal. This primarily represents a mix of methane and CO ₂ .
	- Underground	1,860	1,536	1,274	982	Coal seam emissions from our underground coal industrial assets. This primarily involves methane.
	- Open pit and stockpiling	1,650	1,301	1,310	1,538	CO ₂ e emissions from open pit mining as well as from stockpiling coal prior to its sale.
	- Decommissioned mines	417	618	492	396	CO ₂ e emissions from coal mines which have been closed.
	Other direct CO ₂ e emissions	403	395	390	444	Other CO ₂ e emissions, not covered in the above, directly caused by process activities.
Biogenic CO ₂ emissions	Biogenic CO ₂ emissions (thousand tonnes CO ₂ e)	4	10	40	40	
Energy indirect (Scope 2) GHG emissions* - Market based	Indirect emissions (thousand tonnes CO ₂ e)	12,181	10,047	11,428	11,433Δ	This reflects the emissions emitted by the generators from which our industrial assets contractually purchase electricity bundled with emissions abatement certificates (EACs), or unbundled electricity with EACs on their own, and for which specific emission factors are known, in accordance with the Scope 2 Guidance of the GHG Protocol. 2019-2021 emissions have been restated to incorporate contractual agreements that meet the GHG Protocol's Scope 2 quality criteria and the improved availability of residual grid emissions data. We have furthermore restated baseline emissions to account for acquisitions and divestments completed since 2019. For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications . The scope 2 market-based emissions increased due to higher production at our Ferroalloys smelters in South Africa, which are offset by the delivery of purchased electricity emissions abatement initiatives at other industrial assets within the portfolio.
	Indirect emissions by commodity (thousand tonnes CO ₂ e)	12,181	10,047	11,428	11,433	
	- Aluminium	-	-	-	-	
	- Coal	1,208	1,193	1,164	1,115	
	- Copper	1,217	1,026	730	630	
	- Ferroalloys	6,516	4,873	6,653	6,917	
	- Nickel	268	253	270	244	
	- Oil	158	38	24	22	
	- Zinc	2,814	2,665	2,586	2,506	

Appendix Two: Performance data *continued*

Disclosure	Indicator	2019	2020	2021	2022	Comments
	Indirect emissions by region (thousand tonnes CO ₂ e)	12,181	10,047	11,428	11,433	
	- Africa	7,008	5,236	6,993	7,262	
	- Asia	1,219	1,231	1,107	1,188	
	- Australia	1,623	1,617	1,566	1,442	
	- Europe	1,261	1,226	1,206	975	
	- North America	64	41	40	39	
	- South / Latin America	1,005	695	516	528	
Energy indirect (Scope 2) GHG emissions* - Location based	Indirect emissions (thousand tonnes CO ₂ e)	11,566	8,836	10,355	10,434Δ	This applies the average emissions intensity of grids on which energy consumption physically occurs, regardless of specific renewable electricity contracts, as recommended by the Scope 2 Guidance of the GHG Protocol. For the year ending 2022, we restated our 2019 baseline to reflect industrial asset portfolio changes from acquisitions and divestments (as recommended by the GHG Protocol). For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications . The higher Scope 2 location-based emissions are linked to higher production volumes at our Ferroalloys smelters in South Africa.
Total GHG emissions* (Scope 1 + Scope 2 Market based)	Total emissions (thousand tonnes CO ₂ e (Scope 1); thousand tonnes CO ₂ e (Scope 2)	31,198	25,211	27,374	28,040	Our combined higher Scope 1 and Scope 2 emissions are mainly the result of onsite coal fired power generation linked to increased nickel production at Koniambo and higher production volumes at our Ferroalloys smelters in South Africa.
Other relevant indirect (Scope 3) GHG emissions* - total	Total emissions (thousand tonnes CO ₂ e)	476,696	354,240	364,652	342,101	This Scope 3 total reflects the sum of our industrial assets' value-chain emissions reported within the following Scope 3 categories: 1. Purchased goods and services 3c. Transmission and distribution losses 4. Upstream transportation and distribution 10. Processing of sold products 11. Use of sold products 15. Investments 17. Other downstream: Methane extracted and sold to third-party operated power plants. Reported emissions represent a restatement of previously disclosed totals to account for acquisitions and divestments completed since 2019, implementation of the organisational boundary of operational control for categories 10 and 11, and the use of updated emission factor sources underlying our calculations of emissions reported in categories 1 and 10. For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications .

Appendix Two: Performance data *continued*

Disclosure	Indicator	2019	2020	2021	2022	Comments
1. Purchased goods & services	Total emissions (thousand tonnes CO ₂ e)	555	723	759	719	This covers the estimated cradle-to-gate CO ₂ e emissions of third-party Cu, Pb, Ni and Zn concentrate feeds that we process in the smelting and refining facilities under our operational control. We have changed the source of our emission factors to the latest available commodity specific CO ₂ e and energy intensity curves from Skarn Associates. We use this data to calculate global average emissions per tonne of contained metal for each processing step, allowing us to include individual processing steps depending on the third-party feed purchased, and providing a consistent methodology across the commodities considered. 2019-2021 emissions have been restated to exclude third-party copper concentrate processed at the divested industrial asset Mopani and the change in emission factor source. For further information refer to the About this report section.
3c. Transmission and distribution losses	Total emissions (thousand tonnes CO ₂ e)	990	800	977	999Δ	Transmission and distribution (T&D) losses are emissions from generation (upstream activities and combustion) of energy that is consumed (i.e., lost) in a T&D system. These emissions are calculated by applying the latest available country specific T&D losses as presented by the IEA and multiplying these by the country specific indirect electricity purchased and used by industrial assets under our operational control. 2019-2021 emissions have been restated to exclude T&D losses relating to energy consumed by divested industrial assets and include T&D losses relating to energy consumed by acquired industrial assets. For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications .
4. Upstream transportation & distribution	Total emissions (thousand tonnes CO ₂ e)	2,559	2,932	1,813	2,316	Reported emissions relate to marine fuel consumed by time-chartered shipping that is paid for and organised by our coal and oil departments, and includes one vessel chartered by our nickel department. These emissions are calculated by applying the GHG Protocol's emission factors for the specific fuel types consumed. For coal and oil, calculated emissions relate to the transport of both commodities produced by Glencore-controlled industrial assets and traded volumes, therefore reported emissions do not align with our organisational boundary of industrial assets' operational control. As Glencore pays for this transport, all emissions previously split between categories 4 and 9 have been reallocated to category 4, as recommended by the GHG Protocol's definitions of upstream and downstream transportation.
9. Downstream transportation & distribution	Total emissions (thousand tonnes CO ₂ e)	0	0	0	0	We previously reported emissions related to time-chartered shipping in this category. As Glencore pays for this transport, as recommended by the GHG Protocol's definitions of upstream and downstream transportation, all emissions previously split between categories 4 and 9 have been reallocated to category 4. Methodology options to estimate our emissions from downstream transport (i.e., not paid for by Glencore) are being developed and are planned to be implemented during 2023.

Appendix Two: Performance data *continued*

Disclosure	Indicator	2019	2020	2021	2022	Comments
10. Processing of sold products	Total emissions (thousand tonnes CO ₂ e)	21,697	20,423	21,061	18,937	<p>In this category we account for our estimated emissions from further downstream processing by our customers of saleable volumes of copper, nickel, zinc and lead concentrates and metals, as well as ferrochrome produced at our operationally controlled industrial assets. This category considers emissions from all downstream processing steps from sold intermediate product to first-use product. We have changed the source of our emission factors to the latest available commodity specific GHG and energy intensity curves from Skarn Associates. We use this data to calculate global average emissions per tonne of contained metal for third-party smelting and refining. For the final conversion from metal to first-use product, such as stainless and galvanised steel, copper wire and sheet, we use data from relevant commodity associations' lifecycle assessments.</p> <p>Our 2019-2021 emissions have been restated to account for acquisitions and divestments completed since 2019, consistent implementation of the organisational boundary of operational control, and the changes to our emission factors sources. For further information refer to the <i>About this report</i> section.</p>
11. Use of sold products	Total emissions (thousand tonnes CO ₂ e)	427,201	308,178	321,878	303,341Δ	<p>Reported Scope 3 emissions relate to the use of saleable coal and oil produced by industrial assets under Glencore operational control. Coal and oil are deemed saleable once no further processing is required before use. Regarding coal, reported emissions relate to the use of saleable thermal and metallurgical coal. For Glencore-operated coal joint ventures, saleable coal volumes accounted for have been restated from our attributable share of production to 100% of produced volumes to align our reporting with the organisational boundary of operational control. Our equity share of emissions related to the use of saleable coal produced by independently managed joint ventures is accounted for in category 15 (Investments). 2019-2021 emissions have been restated to account for the implementation of the organisational boundary of operational control, and include 100% of saleable volumes produced at acquired assets (Cerrejón and Astron Refinery), while volumes produced at divested assets (Chad oilfields and Izimbiwa - Middelburg) have been removed. For further information refer to the <i>About this report</i> section and our <i>Basis of Reporting 2022</i> at glencore.com/publications.</p>
15. Investments	Total emissions (thousand tonnes CO ₂ e)	23,416	20,882	17,909	15,566	<p>Reported emissions relate to Glencore's equity share of Scope 1 and 2 and, where relevant for coal industrial assets, Scope 3 emissions of the following investments: Hunter Valley Operations (coal), Wonderfontein (coal), Hlagisa (coal), Antamina (copper), Century Aluminium, Collahuasi (copper) and Viterra (agriculture). The Scope 1 and 2 emissions as most recently published or reported by the investment were taken as input. Where they do not report actual Scope 1 and Scope 2 emissions data, for their inclusion in our Scope 3 emissions, we estimate their Scope 1 and Scope 2 emissions based on those of a comparable industrial asset in close proximity and adjust them on the basis of production volumes. Their Scope 3 emissions are calculated based on saleable volumes. In addition to the expansion of investments and Scope 3 emissions of coal investments accounted for in this category, reported emissions have been restated to account for improved Scope 1 and 2 emissions disclosures from Century Aluminium, Collahuasi and Antamina. For further information refer to the <i>About this report</i> section.</p>

Appendix Two: Performance data *continued*

Disclosure	Indicator	2019	2020	2021	2022	Comments
17. Other downstream: Methane extracted and sold to third-party operated power plants	Total emissions (thousand tonnes CO ₂ e)	278	302	255	225	These values relate to methane extracted by Glencore-operationally controlled coal industrial assets and sold to third-party operated power plants. 2019-2022 emissions have been restated to account for methane emissions that had previously been excluded. For further information refer to the <i>About this report</i> section.
Other Scope 3 categories						The following Scope 3 categories are currently excluded from our emissions inventory: - 2. Capital goods - 3. Fuel- and energy-related activities - 6. Business travel - 7. Employee commuting - 8. Upstream leased assets - 12. End of life treatment of sold products - 13. Downstream leased assets - 14. Franchises - 16. Other upstream emissions
Scope 1 and Scope 2 market based GHG emissions* intensity - Metals mining	t CO ₂ e/t Cu-equiv	3.5	3.7	3.7	4.2	We show the carbon intensity of our industrial assets as Scope 1 and 2 emissions by reference to their production. We have shown metals mining, coal mining, metals smelting and oil refining separately. Emissions data is collected on a site-by-site rather than activity-by-activity basis. Integrated sites with mining and smelting capability have therefore been allocated to the most appropriate category.
Scope 1 and Scope 2 market based GHG emissions* intensity - Metals smelting	t CO ₂ e/t Cu-equiv	8.3	6.6	8.0	8.3	From 2022, we use the market-based approach to our CO ₂ e emissions recording as the primary method for our target-setting and progress measurement. The 2019 baseline has been restated to account for this approach. The 2019 baseline has also been restated to reflect our industrial asset portfolio changes from acquisitions and divestments, most materially the acquisition of Cerrejón. 2019-2021 emissions have also been restated to account for implementation of the organisational boundary of operational control and the change in emission factors sources.
Scope 1 and Scope 2 market based GHG emissions* intensity - Coal mining	t CO ₂ e/t Cu-equiv	4.5	5.1	4.7	4.9	"Cu-equiv" are the copper equivalents converted on the basis of 2019 (baseline year) average prices.
Scope 1 and Scope 2 market based GHG emissions* intensity - Oil refining and distribution	t CO ₂ e/billion Btu	6.4	6.0	-	-	Refer to Note 1 of the financial statements in the <i>2022 Annual Report</i> for additional information.

* We refer to 'direct / indirect greenhouse gas' (GHG) as opposed to CO₂e in this Appendix to mirror the approach followed by the Global Reporting Initiative (GRI). For purposes of this Appendix, GHG and CO₂e have the same meaning.

Δ This 2022 KPI is subject to independent Limited Assurance by Deloitte LLP under ISAE 3000 (Revised). Refer to the *Basis of Reporting 2022* for how our sustainability KPIs that are subject to assurance are defined. Deloitte LLP's assurance statement is published in our *2022 Annual Report*. Both publications can be found at [glencore.com/publications](https://www.glencore.com/publications).

Appendix Three: Industry organisations

The industry organisations, in which we hold a membership, included in our annual review are set out below. The identified organisations were current at the time of this report's publication:

Global

- Cobalt Institute
- CONCAWE
- Extractive Industries Transparency Initiative
- Global Battery Alliance
- International Council for Metals & Minerals
- International Association of Independent Tanker Owners
- International Cadmium Association
- International Chamber of Commerce
- International Chromium Development Association
- International Copper Association
- International Emissions Trading Association
- International Energy Agency – Coal Industry Advisory Board
- International Lead Association
- International Manganese Institute
- International Zinc Association
- Lower Olefins and Aromatics Reach Consortium
- Maritime Anti-Corruption Network
- Nickel Institute
- Partnering Against Corruption Initiative
- Responsible Minerals Initiative
- Vanitec
- Vanadium Consortium

- World Economic Forum Platform for Accelerating the Circular Economy (PACE)

Africa

Chad

- Oil Operators Association (membership ceased in June following divestment of assets)

Democratic Republic of Congo

- Extractive Industries Transparency Initiative-DRC
- Fair Cobalt Alliance (FCA)
- Federation of Enterprises of the Congo / Chamber of Mines
- Responsible Minerals Initiative

South Africa

- African Refiners and Distributors Association
- Business Unity South Africa
- CoalTech Research Association
- Energy Institute
- Energy Intensive User Group
- Engineering Council of South Africa
- Ferro Alloys Producers Association
- Johannesburg Chamber of Commerce and Industry
- Mine Managers Association
- Minerals Council South Africa
- Mine Ventilation Society of South Africa
- Mine Water Coordinating Body
- NAPCOF
- National Business Initiative
- South African Coal Managers Association and associated sub associations (SACEA, SACAFMA, SACHRA, SACESHA)
- South African Colliery Administrative and Financial Managers Association
- South African Colliery Engineers Association

- Southern African Institute of Mechanical Engineering
- Southern African Institute of Mining and Metallurgy
- South African National Institute of Rock Engineers
- South African Petroleum Industry Association

Australia

- Chamber of Minerals and Energy of Western Australia
- Low Emission Technology Australia (formally COAL21 Fund)
- Minerals Council of Australia
- NSW Minerals Council
- Queensland Resources Council

Europe

Austria

- The (REACH) Vanadium Consortium

Belgium

- Aluminium REACH consortium
- Eurometaux
- European Copper Institute
- European Precious Metals Federation
- REACH Antimony
- REACH Arsenic
- REACH Cadmium
- REACH Copper Consortium
- REACH Lead consortium
- REACH Manganese Consortium
- REACH Nickel Consortium
- REACH Selenium & Tellurium Consortium
- REACH Vanadium Consortium
- REACH Zinc
- RECHARGE
- Sulphuric acid REACH consortium

Germany

- GDB (Non-Ferrous Metals Association)
- Wirtschaftsvereinigung Metalle (Non-Ferrous Metals Association)
- Verband der Chemischen Industrie (Chemicals Industry Association)

Italy

- Assomet (Non-Ferrous Metal Association)
- Confindustria (National Industrial Association)

Kazakhstan

- Association of Mining and Metallurgical Companies
- Electrical Energy Association of Kazakhstan
- National Chamber of Entrepreneurs
- Republican Association of Ore mining and Mining and Processing Enterprises
- Spain
- AEGE (Association of Companies of Intensive Electricity Consumption)
- TEDFUN (Technical Association for Die Casting)

Switzerland

- British-Swiss Chamber of Commerce
- International Chamber of Commerce Switzerland
- Swiss-African Business Circle
- Swiss American Chamber of Commerce
- SwissHoldings
- Zug Chamber of Commerce
- Zurich Chamber of Commerce

Appendix Three: Industry organisations *continued*

North America – Canada

- Association de l'Exploration Minière du Québec
- Associations of Major Power Consumers of Ontario
- Association Minière du Québec
- Canadian Chamber of Commerce
- Canadian Mining Innovation Council
- Canadian Institute of Mining, Metallurgy and Petroleum
- Conseil du Patronat du Québec
- Conseil Patronal de l'Environnement du Québec
- Fédération Chambres de commerce du Québec
- Mining Association of Canada
- Ontario Chamber Commerce
- Ontario Mining Association

South America

Argentina

- Argentine Mining Chamber (CAEM)
- San Juan Mining Chamber
- World Business Council for Sustainable Development (CEADS in Argentina)

Brazil

- Brasilcom (Federação Nacional das Distribuidoras de Combustíveis, Gás Natural e Bicomcombustíveis - National Federation of Fuel, Natural Gas and Biofuels Distributors)
- Instituto Combustível Legal
- Institute for Development of Retailers

Chile

- Chile Mining Council

Colombia

- ANDI Large energy consumers roundtable
- Colombian Mining Association
- Global Business Initiative on Human Rights (GBI)
- Global Compact
- Industry Association - ANDI (Colombia)
- Mesa Guajira ANDI
- Mining and Energy Committee on Security and Human Rights – CME
- National Foreign Trade Association – ANALDEX

Peru

- Aloxi-Alianza para Obras por Impuestos
- Camara de Comercio Americana del PERU (MCHAM)
- Camara de Comercio de Lima
- Cámara de Comercio Suiza en el Perú
- Comité de Operaciones del Sistema Interconectado Nacional
- Sociedad Nacional de Minería, Petróleo y Energía

Glossary

AR6

The IPCC's sixth assessment report is the sixth in a series of reports. It comprises contributions by three working groups which assessed scientific, technical, and socio-economic information concerning climate change. The Working Group I contribution was released on 9 August 2021. The Working Group II and III contributions were released on 28 February and 4 April 2022 respectively. The Climate Change 2022, Mitigation of Climate Change, Working Group III contribution to the Sixth Assessment Report of the IPCC

Full Report: <https://www.ipcc.ch/report/ar6/wg3/>

Basis of Reporting 2022

Our Basis of Reporting 2022 provides information, including definitions and the applied underlying processes, on the collection and verification of specific environmental, social and governance metrics and is available at glencore.com/publications

carbon neutrality

See net zero carbon dioxide

carbon offsets

The compensation for an entity's emissions within its scope by achieving an equivalent amount of emission reductions or removals outside the boundary or value chain of that entity, which may include the usage of carbon credits pursuant to a recognised carbon credit programme.

care and maintenance

A phase in the life cycle of an industrial asset where mining, processing and/or operations temporarily ceased and are placed into care and maintenance, ready to be restarted again, as circumstances may allow.

CCS

Carbon, capture and storage

CO₂

Carbon dioxide

CO₂e

Carbon dioxide equivalent (CO₂e) is the universal unit of measurement for the global warming potential (GWP) of GHGs, where one unit of CO₂e is the GWP for one unit of carbon dioxide. This unit allows us to discuss the equivalence of different GHGs in terms of their GWP. The GWPs used in this report are one for CO₂, 28 for methane and 265 for nitrous oxide, as per the IPCC's Climate Change 2014 Synthesis Report (released as part of the Fifth Assessment Report).

CA100+

Climate Action 100+

CTSCo

Glencore's wholly owned subsidiary, Carbon Transport and Storage Company Pty Ltd (CTSCo), is developing a CCS project.

emissions factor

A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant and thereby describe the rate at which a given activity releases GHGs into the atmosphere.

EVs

electric vehicles

Greenhouse Gas (GHG)

Abbreviation of greenhouse gas. A gas that absorbs infrared radiation (net heat energy) emitted from the earth's surface and radiates it back to earth's surface, contributing to the greenhouse effect. Carbon dioxide, methane, and water vapour are the most commonly referred to greenhouse gases. Others include surface-level ozone, nitrous oxides, and fluorinated gases. In this report, we discuss GHG emissions as CO₂e.

Greenhouse Gas (GHG) Protocol

Standards and guidance for corporate accounting and reporting on emissions, which help governments and business leaders to understand, quantify, and manage emissions. The GHG Protocol separates emissions into different scopes depending on source. It is available at:

<https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

HELE

High-Efficiency Low Emission

ICMM

International Council for Mining & Metals

IEA

International Energy Agency

independently managed joint venture

A joint venture which operates independently from its shareholders. This means that a board of directors not controlled by Glencore, with an independent executive management and corporate functions, including finance and legal, is established to operate the JV. The shareholders' involvement in the JV is typically limited to participation in the board and shareholder governance bodies.

industrial activities

Glencore term covering activities of the Group's industrial assets focused on exploring, extracting, processing, refining and delivering commodities, which generally provide a source of physical commodities for the Group's marketing activities. See 'marketing activities'.

industrial asset

An operation involved in the extraction, production or processing of minerals and metals and energy products for sale or further processing. An industrial asset may comprise several sites in different locations under the same management control supporting these activities, with "our industrial assets" being the industrial assets over which Glencore has operational control.

IPCC

The United Nations Intergovernmental Panel on Climate Change (IPCC) assesses scientific, technical and socio-economic information relating to the risk of human-induced climate change. The United Nations Environment Programme and the World Meteorological Organization established the IPCC.

LME

London Metal Exchange

Low carbon economy (also referred to as a decarbonised economy)

An economy that causes low levels of emissions compared with today's carbon-intensive economy..

MACC

A marginal abatement cost curve (MACC) is an estimate of the volume and costs of opportunities to reduce emissions.

Glossary *continued*

marketing activities

Glencore term relating to the marketing and trading of commodities, which focuses on sourcing a diversified range of physical commodities from third-party suppliers and from industrial assets in which Glencore has full or part ownership interests. These commodities are sold, often with value-added services such as freight, insurance, financing and/or storage, to a broad range of customers and industrial commodity end-users. See 'industrial activities'.

Nationally Determined Contributions (NDCs)

A Nationally Determined Contribution (NDC) is a climate action plan required to be established by each country which is a party to the Paris Agreement, and which sets out that country's commitments to reduce national emissions and adapt to the impacts of climate change.

net zero carbon dioxide emissions

"Net zero carbon dioxide (CO₂) emissions are achieved when anthropogenic CO₂ emissions are balanced globally by anthropogenic CO₂ removals over a specified period. Net zero CO₂ emissions are also referred to as carbon neutrality."

<https://doi.org/10.1017/9781009157940.008>

IPCC, 2018: Annex I: Glossary (Matthews, J.B.R. (ed.)). In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou,

M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)). Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 541-562. <https://doi.org/10.1017/9781009157940.008>. Found at: <https://www.ipcc.ch/sr15/chapter/glossary/>

Throughout this report, where we refer to our ambition (or similar) and/or efforts to achieve 'net zero emissions', we are referring to a net zero ambition in relation to our emissions.

NZE

Net zero CO₂ emissions

operational control

Where Glencore directly or indirectly controls and directs the day-to-day management and operation of the entity engaging in such activity, whether by contract or otherwise.

operating jurisdictions

The jurisdictions where we control or operate an industrial asset.

Our emissions

CO₂e emissions from our industrial assets (including Scope 1, 2, and 3) which is defined by reference to operational control save for certain emissions relating to our equity share in certain independently managed joint ventures, as set out in the *About this report* section of this report, in *Appendix Two: Performance data* and the *Basis of Reporting 2022*.

Where 'industrial' is used before 'emissions', this is for additional clarity, and the underlying meaning is the same irrespective of whether this is included.

the Paris Agreement

An agreement adopted on 12 December 2015 at the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), dealing with emissions mitigation, adaptation, and finance, which came into force 4 November 2016 (UN Doc FCCC/CP/2015/10/Add.1).

Pastoral assets

Assets where the primary commercial activities are concerned with the grazing of cattle.

Petajoule (PJ)

A measure of energy equivalent to a thousand trillion joules, or 10¹⁵ joules, usually used to express energy consumption by cities or major industries.

policy

A document issued by Glencore with a Group-wide scope, setting out the high-level approach and requirements on a topic. Group-wide scope means the approach and requirements apply to all regions and business activities.

procedure

A document issued by the Group which establishes requirements and defines the specific steps that must be taken to implement those requirements, generally as required by Group policies and standards.

Safeguard Mechanism (SGM)

A framework for Australia's largest emitters to measure, report and manage their emissions.

Scope 1 emissions

Scope 1 emissions means direct emissions from an activity or facility. Our approach to our Scope 1 emissions is set out in the *About this report* section of this report and in *Appendix Two: Performance data* and the *Basis of Reporting 2022*.

Scope 2 emissions

Scope 2 emissions means the indirect emissions associated with the generation of purchased electricity, steam and heating/cooling for an activity or facility. We consider both location-based and market-based methodologies, and our approach to our Scope 2 emissions is set out in the *About this report* section of this report and in *Appendix Two: Performance data* and the *Basis of Reporting 2022*.

Scope 3 categories

The GHG Protocol provides for 15 categories of Scope 3 emissions, of which Glencore currently reports on:

- Category 1 - Purchased goods and services
- Category 3c - Transmission and distribution (T&D) losses:
- Category 4 - Upstream transportation and distribution
- Category 9 - Downstream transportation and distribution
- Category 10 - Processing of sold products
- Category 11 - Use of sold products
- Category 15 - Investments

Glossary *continued*

Scope 3 emissions

Scope 3 emissions means all indirect emissions other than those treated as Scope 2 emissions, including value-chain emissions. Our approach to our Scope 3 emissions is set out in the *About this report* section of this report and in *Appendix Two: Performance data* and the *Basis of Reporting 2022*.

SR1.5 scenario

The SR1.5 scenario is taken from: IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.). In Press).

SR1.5 report

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global GHG emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. More information on the report is available at <https://www.ipcc.ch/sr15/>.

stakeholders

All individuals and groups that have an interest in, or can either impact or be impacted by, Glencore's business which may include employees, shareholders, debt providers, communities, suppliers, customers, governments, and civil society.

standard

A document issued by Glencore which sets out the key requirements established on a particular topic. It contains detailed requirements that support the principles set out in the Code of Conduct or a policy. A standard does not set out the step-by-step process of how the specific requirements should be met.

supportive policy environment

Significant global technological evolution and advancements, and coordinated government policies, including incentives to drive accelerated uptake of lower carbon and decarbonisation technologies, and market-based regulations governing industrial practices that drive a competitive, least cost emissions reduction approach, much of which is not within our direct control or ability to materially influence but are critical to our ability to achieve our net zero emissions ambition by the end of 2050.

transition metals

Metals that form part of a wider group of future-facing commodities that play an integral role in the production of clean energy technologies such as the equipment which is used in the generation of renewable energy.

United Nations Framework Convention on Climate Change (UNFCCC)

An international environmental treaty adopted on 9 May 1982, which entered into force on 21 March 1994, with the aim of at combatting "dangerous human interference with the climate system", in part by stabilising GHG concentrations in the atmosphere, and which has near-universal membership. More information on the UNFCCC is available at <https://unfccc.int>

United Nations Sustainable Development Goals (SDGs)

A collection of 17 interlinked global goals to end poverty, protect the planet and improve the lives and prospects of everybody everywhere. The UN General Assembly established the SDGs in 2015 and the SDGs are intended to be achieved by 2030. More information on the SDGs is available at <https://sdgs.un.org/goals>.

workforce

References to our workforce include both employees and contractors.

vulnerable groups

An individual person or group of people who hold specific characteristics, such as age, race or ethnicity, which limit the ability of that individual or group to respond to changes.

About this report

About this report

This report has been prepared in consideration of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Unless otherwise stated in this report, we have given consideration to the GHG Protocol's Corporate Standard (including Scope 2 Guidance) and the Corporate Value Chain (Scope 3) Standard in formulating our approach to calculating the emissions that we report on.

Deloitte LLP provides independent Limited Assurance over selected 2022 climate and energy KPIs under ISAE 3000 (Revised), as identified in *Appendix Two: Performance data*. Deloitte LLP's assurance statement is published in our *2022 Annual Report*. Their assurance statement and this report should be read alongside the *Basis of Reporting 2022*. Both publications are available at glencore.com/publications.

Boundaries and scope

General approach: organisational boundary of operational control

This report generally covers information and data from the activities of our industrial assets where we have operational control, i.e., where Glencore directly or indirectly controls and directs the day-to-day management and operation of the entity engaging in such activity, whether by contract or otherwise. Where we have operational control of industrial assets, we report on Scope 1, 2 and 3 on a 100% basis, irrespective of our actual equity share.

For certain industrial assets that are not under Glencore's operational control, we report our equity share of such industrial assets' Scope 1 and 2, and where relevant, Scope 3 emissions in Scope 3, category 15, as

further set out in the explanatory notes (see *Appendix Two: Performance data*).

Further details on the organisational boundaries and the corresponding method of calculation of the Scope 1, 2, and the Scope 3, categories 3c and 11 of our emissions we report on, are included in *Appendix Two: Performance data* and the *Basis of Reporting 2022*.

General approach: Methodology

Details on the methods of calculation for each of our reported emissions categories are set out in the explanatory notes for the respective category in *Appendix Two: Performance data*.

Exceptions and exclusions

We exclude certain CO₂e emissions data from particular warehouses, terminals, ports and other small non-producing industrial assets, as well as pastoral assets under our operational control and certain industrial offices located off site, as we consider their contribution to these indicators to be sufficiently small so as to be immaterial in the context of our overall emissions profile.

Scope 3, category 4 emissions of our industrial assets are reported as further set out in the explanatory notes to Scope 3, category 4, see *Appendix Two: Performance data*.

Our corporate and marketing offices do not report on Scope 1 and 2 emissions data as we consider their contribution to be immaterial in comparison with that of our industrial assets.

We do not include Scope 3 emissions related to third-party volumes traded by our marketing business in our emissions reporting and targets. However, the emissions associated with certain physical aspects of our trading activities, such as

shipping, have been included in our strategy, and we continue to strengthen the accuracy of our reporting of these emissions.

As part of the work on our draft, revised, Emissions and Energy Reporting Procedure, we are reviewing the applicability of each Scope 3 category, including those that we have not previously included in our Scope 3 inventory. In consideration of the GHG Protocol criteria for identifying relevant Scope 3 activities within our organisational boundary of operational control, we are reviewing the category boundaries we currently set and previously excluded value-chain emission sources. Where we find that an expansion or adjustment of our reporting is justified, we will consider methodology options and appropriate sources for activity data and emission factors to further enhance our Scope 3 emission disclosures. We plan to publish the results of our further updated Scope 3 approach in our 2023 Climate report.

Baseline emissions restatement

This report contains data for the full year 2022 and a restatement of energy use and Scope 1, 2 and 3 emissions for the years 2019-2021.

Glencore has established a fixed baseline year of 2019 for our industrial asset emissions (Scope 1, 2 and 3) reduction targets. To enable comprehensive and consistent tracking of progress against targets over time, the GHG Protocol requires a restatement of baseline emissions when significant changes in company structure or emissions inventory methodology occur, including:

- structural changes such as mergers, acquisitions and divestments;
- changes in calculation methodologies, improvement in data accuracy, or discovery of significant errors; and
- changes in categories or activities included in the Scope 3 inventory²⁶.

We have restated our 2019 baseline to reflect industrial asset portfolio changes from acquisitions (most notably, Cerrejón in 2022) and disposals (as recommended by the GHG Protocol). We have also taken the opportunity to make some changes to the scope of our reporting of Scope 3, categories 10 and 11 emissions, resulting in the inclusion of Scope 3 emissions from coal production volumes under our operational control, and to reflect an updated approach to our emission factors sources and our enhanced market-based emissions intensity methodology.

Restatement for acquisitions and divestments

Emissions from industrial assets acquired since the baseline date and falling within the organisational boundary were added to the emissions profile, including the baseline. Similarly, emissions from sold industrial assets, which were previously within the organisational boundary, were removed from the baseline for subsequent reporting periods.

This has resulted in an increase in Scope 1 and Scope 3 emissions, and a slight increase in our Scope 2 emissions.

²⁶ The GHG Protocol, 'A Corporate Accounting and 1 Reporting Standard' Revised Edition, page 35, available at: <https://ghgprotocol.org/corporate-standard>

About this report *continued*

Restatement for enhanced Scope 2 – market-based emissions intensity methodology

During 2022, we reviewed our electricity supply contracts and redefined renewables contracts to ensure that only those sourced from a renewable supplier with an associated accreditation meeting the GHG Protocol Scope 2 quality criteria are included as low- or zero-carbon contracts. This, together with a review of the residual grid emissions factors to account for renewable electricity which has been contracted to others, required adjustment to our Scope 2 market-based emissions.

Future assessment of our industrial Scope 2 performance versus our emissions reduction targets will be on the market-based approach. As such, the total inventory of the reported emissions of our industrial assets will include our market-based Scope 2 emissions. We will continue to report location-based emissions data separately and have updated the location-based emissions factors to reflect the latest data that was available at the end of 2022.

Restatement for enhanced Scope 2 – location-based emissions intensity methodology

We have restated our baseline Scope 2 location-based emissions by applying the most recent emission factors that were available at the end of 2022 for the years 2019 to 2022. As the emission factors provided by the relevant sources lag about two years, this may result in differences between a given reporting year and the year for which the emission factors apply (e.g., IEA's emission factors published in 2022 provide emission factors for the year 2020, which we apply to our 2022 Scope 2 location-based emissions).

In the past and for 2022, we restated our emission factors over time to align the reporting year with the emission factor year (which only become available with a time lag). Going forward, we will no longer restate for emission factors but continue to apply the emission factors that are available at the end of a reporting year for the given reporting year.

We have also restated our baseline emissions for our Scope 2 location-based emissions to apply the CO₂ equivalent, i.e., including methane and nitrous oxide. In the past our Scope 2 location-based emissions only presented CO₂-emissions.

Restatement to implement organisational boundary of operational control

We have historically calculated and reported Scope 3 emissions in categories 10 and 11 based on our publicly available annual production reporting, which generally is prepared on a basis consistent with the principles of consolidation supporting the International Financial Reporting Standards (IFRS) financial results, analysis and commentary for the respective year. As part of our production reporting, volumes produced by all industrial assets that we fully consolidate under IFRS are reflected at 100% (regardless of Glencore's equity interest) which is consistent with the operational control method set out in the GHG Protocol.

For certain other industrial assets, we report Glencore's attributable share of production, which is largely consistent with the equity share method set out in the GHG Protocol.

As part of the continued evolution in our approach to Scope 3 emissions reporting, we reviewed our methodology and concluded that, for the purposes of Scope 3 categories 10 and 11 emissions, a uniform approach would deliver enhanced clarity and transparency. Accordingly, for FY2022, we have based our reporting consistently using the operational control method.

For 2022, this has resulted in a number of industrial assets that were previously reported on an equity share basis now being reflected at 100%. We have, accordingly, adjusted our baseline by a limited amount relative to our overall emissions profile (with most of this adjustment deriving from specific coal joint ventures²⁷ and reallocated certain of our emissions across various Scope 3 categories. See waterfall graph, *Restated 2019 baseline for Scope 1, 2 and 3 emissions*, and the restatement table, *Overview of industrial asset restatements*, for further details.

Restatement for enhanced emissions factors in Scope 3, category 1 and 10

We have also changed the emission factors we use to calculate our Scope 3 emissions reported in categories 1 and 10 and restated our baseline emissions accordingly.

Applying the principles of the GHG Protocol's 'average data' method, in category 1, we account for the estimated "cradle-to-gate" emissions of third-party copper, lead, nickel and zinc feeds that we process in the smelting and refining facilities under our operational control. We have changed the source of our emission factors to the latest available commodity specific GHG and energy intensity curves from Skarn Associates²⁸.

We use this data to calculate global average emissions per tonne of contained metal for each processing step, allowing us to include or exclude individual processing steps depending on the third-party feed purchased, and providing a consistent methodology across the commodities considered. This change in relevant emission factor sources has resulted in a decrease in annual emissions reported in category²⁹.

In category 10, we account for estimated emissions from further downstream processing by our customers of copper, nickel, zinc and lead concentrates and metals, as well as ferrochrome produced at the industrial assets under our operational control. This category considers all downstream processing emissions from sold intermediate product to first-use product²⁹. An overview of intermediate products and first use products considered in our calculations is provided in the table on the following page.

²⁷ Our previous calculations were based on emission factors taken from the 2006 IPCC guidelines for zinc and lead, the 2016 "Life cycle assessment of nickel products" for nickel, and for copper we used a calculated average emission factor from our African copper industrial assets as a proxy.

²⁸ This change primarily relates to a previous overestimation of cradle-to-gate nickel, zinc and lead concentrate emission factors, partially offset by an underestimation of the cradle-to-gate copper concentrate emission factor.

²⁹ While first-use products form the basis for subsequent end-use products, in first use state a material does not anatomically change and does not require further energy-intensive metallurgical processing but may still undergo some mechanical processing.

About this report *continued*

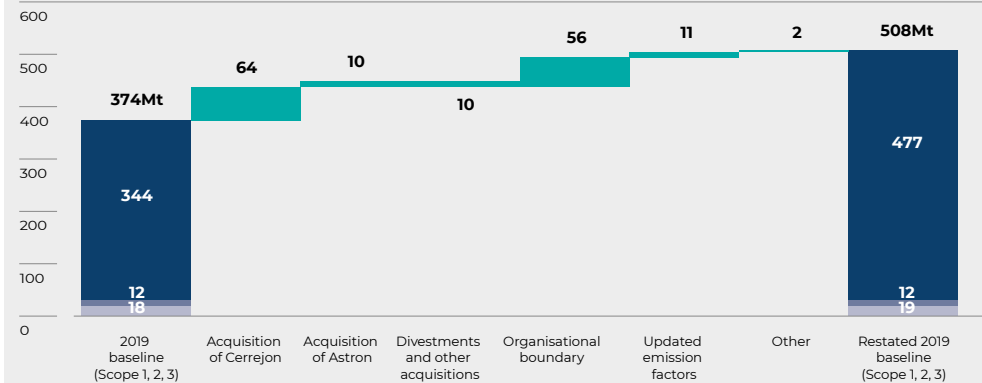
We have changed our approach to the emission factors we use for downstream smelting and refining with those used in our upstream calculations (category 1), and added emissions associated with the conversion to first-use products as calculated by the relevant commodity associations. This change has resulted in an increase in annual emissions reported in category 10, primarily relating to a previous underestimation of zinc and lead processing emissions.

Description of intermediate, first use and end use products by commodity group

Commodity	Intermediate products	First use products	End use
Copper	Copper concentrate, copper anode	Copper semis (wire, rod, and tubes) (100%)	Batteries, Construction, Transport
Ferrochrome	Ferrochrome	Stainless steel (100%)	Construction, Transport, Engineering, Consumer goods
Lead	Lead concentrate, refined lead	Lead acid battery (93%); Sheet (7%)	Batteries, Cable, Sheathing, Alloys, Ammunition
Nickel	Nickel concentrate, refined nickel	Stainless steel (100%)	Construction, Transport, Metal goods
Zinc	Zinc concentrate, refined zinc	Galvanising (80%); diecast alloy (20%)	Construction, Automotive, Engineering machinery, Consumer goods

Overview of industrial asset restatements:

Restated 2019 baseline for Scope 1, 2 and 3 emissions



About this report *continued*

The following table illustrates these restatements in further detail:

Commodity	Country	Industrial asset	Reason for change	Change to Scope 1/2 emissions baseline	Change to Scope 3 emissions baseline	Waterfall chart	Scope 1 + 2 Emissions Delta in Million Tonnes ⁴	Scope 3 Emissions Delta in Million Tonnes
Coal	Australia	Bulga	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 87.5% in 2019 baseline)	Organisational boundary	n/a	2.6
Coal	Australia	Clermont	Operated by Glencore but production volumes not included in production report, as Glencore from an accounting perspective does not have control	No change (included at 100%)	Added (100%) to category 11 (previously 0%)	Organisational boundary	n/a	29.6
Coal	Australia	Hail Creek	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 84.7% in 2019 baseline)	Organisational boundary	n/a	3.5
Coal	Australia	Hunter Valley Operations (HVO)	Independently managed joint venture with attributable share of production volumes included in production report ¹³	No change (not included)	Scope 3 equity share of 49% (baseline 2019) reallocated from category 11 to 15 and added equity share of Scope 1 and 2	Organisational boundary	n/a	0.3
Coal	Australia	Liddell	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 67.5% in 2019 baseline)	Organisational boundary	n/a	2.9
Coal	Australia	Oaky North	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 55% in 2019 baseline)	Organisational boundary	n/a	6.6
Coal	Australia	Ravensworth North	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 90% in 2019 baseline)	Organisational boundary	n/a	2.3
Coal	Australia	Rolleston	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 75% in 2019 baseline)	Organisational boundary	n/a	9.7
Coal	Australia	United Wambo	Production volumes included in production report at attributable share; previously reported equity share in Scope 3, category 11 ¹	No change (included at 100%)	Included at 100% in category 11 (previously included at equity share of 47.5% in 2019 baseline)	Organisational boundary	n/a	nil production in 2019 ⁵

About this report *continued*

Commodity	Country	Industrial asset	Reason for change	Change to Scope 1/2 emissions baseline	Change to Scope 3 emissions baseline	Waterfall chart	Scope 1 + 2 Emissions Delta in Million Tonnes ⁴	Scope 3 Emissions Delta in Million Tonnes
Coal	Colombia	Cerrejón	Acquisition of interests from joint venture partners and assumed operational control ¹	Added (100%)	Added (100%) (previously only included in category 15, equity share of Cerrejón's scope 1 and 2 emissions (estimated))	Acquisition of Cerrejón	1.0	62.8
Coal	South Africa	Hlagisa	Independently managed joint venture with attributable production volumes included in production report ³	No change	Removed from category 11 (previously included at 100%) and added equity share of 23.12% (baseline 2019) of Scope 1, 2 and 3, to category 15	Organisational boundary	n/a	-2.7
Coal	South Africa	Izimbiwa (Middleburg)	Sold in 2022	Removed from baseline	Removed from baseline (previously included at 100%)	Divestments and other acquisitions	-0.1	-6.8
Coal	South Africa	Wonderfontein	Independently managed joint venture and production volumes excluded from production report ²	Removed from baseline	Added equity share (24.34%) of Scope 1, 2 and 3 to category 15	Organisational boundary	0.0	1.4
Coal	South Africa	Middelkraal	Independently managed joint venture and production volumes excluded from production report ² (mine closed)	Removed from baseline	Removed from baseline (category 3c)	Organisational boundary	0.0	nil production ⁶
Coal	South Africa	Spring Lake	Divestment (closed site)	Removed from baseline	Removed from baseline (category 3c)	Divestments and other acquisitions	0.0	nil production ⁶
Copper	Argentina	Alumbrera	Divestment	Removed from baseline	Removed from baseline (category 3c)	Divestments and other acquisitions	0.0	nil production ⁶
Copper	Australia	Ernest Henry	Divestment	Removed from baseline	Removed from baseline (previously included at 100% in category 10)	Divestments and other acquisitions	-0.1	0.0
Copper	Peru	Antamina	Independently managed joint venture with attributable share of production volumes included in production report	No change (not included)	Removed equity share of 33.75% (2019 baseline) from category 10; equity share of Scope 1 and 2 remains in category 15	Organisational boundary	n/a	-1.0
Copper	Peru	Collahuasi	Independently managed joint venture with attributable share of production volumes included in production report	No change (not included)	Removed equity share of 44% (2019 baseline) from category 10; equity share of Scope 1 and 2 remains in category 15	Organisational boundary	n/a	-0.9
Copper	Zambia	Mopani	Divestment	Removed from baseline	Removed from baseline (previously included at 100% in categories 1 and 10)	Divestments and other acquisitions	-0.2	-0.1
Copper	Zambia	Sable	Divestment	Removed from baseline	Removed from baseline (category 3c)	Divestments and other acquisitions	0.0	nil production ⁶

About this report *continued*

Commodity	Country	Industrial asset	Reason for change	Change to Scope 1/2 emissions baseline	Change to Scope 3 emissions baseline	Waterfall chart	Scope 1 + 2 Emissions Delta in Million Tonnes ⁴	Scope 3 Emissions Delta in Million Tonnes
Ferroalloys	South Africa	Chrome PSV	Operated by Glencore with production volumes included in production report at attributable share	No change (included at 100%)	Included at 100% in category 10 (previously included at 79.5% equity share in 2019 baseline)	Organisational boundary	n/a	0.4
Nickel	Tanzania	Kabanga	Divestment	Removed from baseline	Removed from baseline (category 3c)	Divestments and other acquisitions	0.0	nil production in 2019 ⁵
Oil	Chad	Chad Oil	Divestment ¹	Removed from baseline	Removed from category 11 (previously included gross volumes in 2019 baseline)	Divestments and other acquisitions	-0.3	-2.2
Oil	South Africa	Astron Energy	Acquisition completed in 2019 (was not operating through much of 2020 and 2021)	Added Q1 2019 (100%)	Added (100%) to category 11	Acquisition of Astron	0.2	10.3
Zinc	Argentina	Argentinian Minera Aguilar Group	Divestment	Removed from baseline	Removed from baseline (previously included at 100% in category 10)	Divestments and other acquisitions	0.0	-0.1
Zinc	Bolivia	Sinchi Wayra	Divestment	Removed from baseline	Removed from baseline (previously included at 100% in category 10)	Divestments and other acquisitions	0.0	-0.2
Zinc	Germany	Nordenham Metall	Acquisition	Added (100%)	Added (100%) to category 10	Divestments and other acquisitions	0.1	0.1
Zinc	Peru	Los Quenuales	Divestment	Removed from baseline	Removed from baseline (previously included at 100% in category 10)	Divestments and other acquisitions	0.0	-0.2
Zinc	Peru	Volcan	Operated by Glencore although production volumes not included in production report, due to low economic ownership %	No change (included at 100%)	Added at 100% to category 10	Organisational boundary	n/a	1.2

1 Due to the increase of our stake in Cerrejón to 100% (bringing it within the organisational boundary of operational control), the divestment of the Chad oilfields, and the consistent implementation of the operational control method, we will not be reporting on Scope 3, category 11 "(Use of sold products) - attributable basis" for 2022 as this category is no longer relevant to our reporting.

2 Consistent with our revised organisational boundaries of operational control, Scope 3 category 15 now includes our equity share of Scope 1, 2, and, for independently managed coal joint ventures, Scope 3 emissions of the industrial assets no longer within our organisational boundaries, some of which were previously reported in our Scope 1 and 2 (with the corresponding changes reflected in Scope 1 + 2 emissions delta). Where independently managed joint ventures do not report actual Scope 1 and 2 emissions data, for their inclusion in our Scope 3 emissions, we estimate their Scope 1 and 2 emissions based on those of a comparable industrial asset in close proximity and adjust them on the basis of production volumes. Their Scope 3 emissions are calculated based on saleable volumes.

3 Consistent with our revised organisational boundaries of operational control, we have reallocated to Scope 3, category 15 the emissions of those coal industrial assets not under our operational control (on which our equity share was previously reported in Scope 3, category 11).

4 The net aggregated Scope 1 + 2 emissions delta of the values showing as 0.0 in this column amounts to +3,470 tonnes in total.

5 The production at United Wambo was "nil" in 2019 and there therefore was no applicable Scope 3 data for that year. The asset however produced coal in 2020 and 2021. Kabanga is a divested nickel exploration project with "nil" production in 2019.

6 "nil production" in this regard means that "Production had ceased prior to 2019 and there was therefore no applicable Scope 3 data, hence this was removed from the baseline. Scope 1 and 2 continued to be reported for these sites as there was ongoing activity at the site."

About this report *continued*

Deloitte LLP has not undertaken work to review accuracy and completeness for restated data for previous reporting years and has not provided assurance for restated data.

Data and information

Glencore's internal reporting systems capture and retain the data included in this report.

Our CO₂e emissions have been calculated using Global Warming Potentials from the Intergovernmental Panel on Climate Change's Fifth Assessment Report.

All emissions and energy data stated in this report represent the latest available data, unless referenced otherwise in the text. Some of the totals shown may reflect the rounding up or down of subtotals.

In some instances, we have restated figures from previous years to reflect improvements in our data collection, analysis, and validation systems.

We may change our approach to how we report our climate and energy data in the future without prior announcement; we may also change the reporting of specific data and its interpretation.

Further information about our general approach and position on various climate and sustainability issues is available at: www.glencore.com/sustainability/esg-a-z/climate-change.

Important notice

Important notice concerning this report including forward-looking statements

Given the focus of this document, it is necessarily oriented towards future events and therefore contains statements that are, or may be deemed to be, "forward-looking statements" which are prospective in nature. Such statements may include (without limitation) statements in respect of trends in commodity prices and currency exchange rates; demand for commodities; reserves and resources and production forecasts; expectations, plans, strategies and objectives of management; climate scenarios; sustainability performance (including, without limitation, environmental, social and governance) related goals, ambitions, targets, intentions, visions, milestones and aspirations; approval of certain projects and consummation of certain transactions (including, without limitation, acquisitions and disposals); closures or divestments of certain assets, operations or facilities (including, without limitation, associated costs); capital costs and scheduling; operating costs and supply of materials and skilled employees; financings; anticipated productive lives of projects, mines and facilities; provisions and contingent liabilities; and tax, legal and regulatory developments.

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The information in this document provides an insight into how we currently intend to direct the management of our businesses and assets and to deploy our capital to help us implement our strategy. The matters disclosed in this document are a 'point in time' disclosure only. Forward-looking statements are not based on historical facts, but rather on current predictions, expectations, beliefs, opinions, plans, objectives, goals, intentions and projections about future events, results of operations, prospects, financial conditions and discussions of strategy, and reflect judgments, assumptions, estimates and other information available as at the date of this document or the date of the corresponding planning or scenario analysis process.

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