MINING with purpose

HARMONY

CLIMATE-RELATED FINANCIAL DISCLOSURES 2022

Reporting in accordance with the Recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). This Climate-Related Financial Disclosures 2022 report covers the reporting period ended 30 June 2022 (FY22).

Mining with purpose

Mining with purpose is how we create shared value. It is the golden thread that connects our goals, strategy and business model. Shared value drives our pursuit of operational excellence, includes stakeholders and determines the way we manage our capitals. Guided by sustainable development principles in delivering our strategic objectives, we preserve shared value by ensuring the sustainability and profitability of our business.

Harmony focuses on four of the United Nations' Sustainable Development Goals, namely responsible consumption and production, climate action, life below water and life on land.



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≣⇔⇒**€** Introduction

Harmony Gold Mining Company Limited (Harmony, the group or the company) is a leading global gold and copper company. Our embedded commitment to sustainable development drives integrated risk-based decision making, which creates shared value for all our stakeholders. We recognise the importance of our role in contributing towards the transition to a low-carbon economy, in the context of the mining and minerals industry. Responsible stewardship is our first strategic pillar, and decarbonisation principles are fundamental to our strategy, business processes and decision making. As testament to this, Harmony began decarbonising its operations in 2008. We pre-empted regulations and started our journey proactively.

Addressing climate change through our Decarbonisation Strategy is a cornerstone of Harmony's overall Environmental Strategy, which will take operations to net-zero greenhouse gas (GHG) emissions by 2045.

Our journey to bolster our climate change policies and strategy began in 2021 following board approval of our Decarbonisation Strategy. We developed our net-zero emissions (net-zero) strategy as part of our commitments to the Paris Agreement and the developing global landscape. In January 2022 we submitted a science-based target (SBT) to the Science Based Targets Initiative (SBTi) for validation. We set a robust emission reduction target by joining the Business Ambition for 1.5°C campaign.

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Harmony supports the climate-change commitments of our host countries, South Africa and Papua New Guinea. We also align with the South African Minerals Council of South Africa's Climate Change Position Statement.

latent or final or residual or the tail emission reductions that are not feasibly achievable. Our approach is to use land under our control for carbon removals to achieve this neutralisation.

Part of the Harmony strategy is to re-engineer our portfolio through value-accretive acquisitions. Despite recent acquisitions the GHG intensity of our operations is decreasing, on a milling of ore basis. The acquisition of the Moab Khotsong and Mponeng operations in 2018 and 2020 respectively led to the GHG intensity of gold production to increase by approximately 14%. However, the implementation of our Decarbonisation Strategy will facilitate Harmony's net-zero journey while Harmony pursues growth objectives.

Our net-zero journey has a strong pipeline for the deployment of small-scale and large-scale renewable energy projects. We took the strategic decision to invest in small-scale solar projects to expedite our renewable energy drive. These include rooftop solar projects at our offices and all our administrative buildings. To be resilient as a business and maintain our reputation, the low-carbon transition remains a key consideration in strategic decision making over the coming decades.

We initiated Phase 1 of our renewable energy programme in 2016, when we started with planning and design of the various aspects. We intend to reduce energy consumption from electricity procured through the national grid.

To date, we have obtained generation licences for 30MW installed capacity of renewable energy, for which we are in



the build phase. This phase of the programme will achieve beneficial operation by the end of March 2023.

On the back of Phase I, Harmony secured a R1.5 billion (US\$92 million) green loan for the renewable energy programme's Phase II rollout. Phase II's planned capacity is 137MW on key operational sites. The project is in the feasibility stage, with expected completion by December 2022. It is envisaged that Phase II will reach commercial operation by Q3/Q4 of FY24.

Incentives driving the renewable energy project include cost savings (purchasing less grid electricity), GHG emissions reduction (to meet the 2045 net-zero target) and positioning Harmony as a leader in the global race to decarbonisation.

We give due consideration to capital allocation projects that aid capital towards projects that aid in achieving decarbonisation and address climate change. Our re-engineered portfolio is well placed to transition the company to a low-carbon economy given its gold and copper reserves. The demand for copper and silver will increase as the rollout of global renewable energy and electric vehicles advances.



≣⇔⇒**⊜** Governance

Our approach to the governance of our business and operations continued developing over the past year. Historically, we focused on low-cost gold production. However, over the past decade the energy intensity of production has played an important role. This shift in focus allowed us to achieve 28% reduction in GHG intensity (against ore treated) over the past six years. Our strategic focus informs our net-zero commitment and is developing towards zero-emission gold and growing our re-engineered portfolio, including copper and uranium.

The board of directors is **responsible for aligning our business strategy with our climate change objectives.** The board recognises that achieving our target of net-zero GHG emissions by 2045 is missioncritical.

The board social and ethics committee has strategic oversight regarding climate change within the group. The committee is primarily guided by our overarching responsibility to mine responsibly. In developing our strategy, the committee is guided by relevant and developina environmental legislation, and our host countries' international climate change commitments. Our strategy also considers internationally peerreviewed science.

The chief executive officer (CEO) is responsible for strategy implementation. He takes ownership of Harmony's climate change policy and strategy. The CEO leadership role includes being responsible for all day-to-day management decisions, and for implementing the group's long and short-term plans.

The CEO is supported by the senior executive for sustainable development, who is responsible for the climate change policy and Environmental Strategy's execution. South Africa and Papua New Guinea executives are responsible for this strategy's engineering, operational delivery and project management. Harmony has integrated the recommendations of the TCFD into the corporate reporting approach. **Transparent reporting on our climate change strategies** and actions informed our approach to repositioning our business as a climate resilient operation.

≡⇔⇒**⊜** Risk management

Through an integrated approach to risk-based decision making, we continuously monitor our risks and opportunities. These include climate change risks, at a company and asset level, as part of a multidisciplinary process.

Energy and climate change risk is reviewed considering our enterprise risks at audit and risk committee meetings. The committee's role in the risk management processes is multidimensional. Our risk management in terms of climate change and energy aligns with ISO 14001, ISO 31000 and ISO 50000 standards, which enable the company to identify and manage risks appropriately.

The executive committee and the audit and risk committee meet quarterly to discuss emerging risks and changes in the importance and mitigation of risks. This risk management process reflects Harmony's integrated approach to business and strategic developments.

The social and ethics committee addresses climate change risk. It has oversight of environmental, social, and sustainable development policies, practices, and performance. The investment committee reviews investments in energy efficiency and capital programmes.

We identified several climate-related risks to our operations. Key transitional risks include Harmony's dependency on South Africa's fossil fuel-based electricity grid, and potential carbon tax increases. The South African government plans to change the carbon tax legislation to make Eskom (South Africa's national power utility) liable to pay carbon tax from January 2026 onwards. This will result in a pass-through cost on electricity from January 2026. We are assessing the potential impacts on our operating costs. We are engaging with government on this issue through the Minerals Council of South Africa.

Papua New Guinea faces a key transitional risk relating to the lack of investment in and unreliability of power generation and transmission infrastructure. This is underpinned by factors such as the base-case decision for the Wafi-Golpu project to self-generate using intermediate fuel oil. As the project requires stable power for underground safety, this necessitated method is emissions intensive. We will reconsider alternative power options for Wafi-Golpu in line with Harmony and Newcrest net-zero commitments. Grid capacity and reliability are major factors in selecting a power solution.

We continuously assess physical risks to our operations, supply chains and broader communities.



Harmony conducted a climate change scenario analysis in July 2020, informed by the TCFD recommendations. This enabled the group to plan for potential scenarios caused by climate change. Our approach to the scenario analysis comprised five steps to determine the financial impacts of climate change scenarios on Harmony's business. These are summarised in figure 1 on page 5.

The scenario analysis showed that Harmony is well placed to transition to a low-carbon economy given its gold and copper reserves. Gold is typically seen as a hedge against geo-political uncertainty.



Figure 1: The five main steps applied in the climate change scenario analysis

The scenario analysis identified Harmony's transitional and physical risks. These are presented in figure 2, which identifies climate change risk, intermediate drivers and the financial impact.



Figure 2: Climate change risks identified during the climate change scenario analysis

Case study

During FY22, Harmony supported Hidden Valley's operation landowner communities who do not have access to reticulated power in their villages. Harmony provided solar lighting kits and biomass stoves for over 300 families. The solar lighting kits reduced families' reliance on open fires and kerosene lamps, while facilitating activities such as studying, and supporting small income-generating activities such as the sale of goods. Several health benefits are associated with reducing exposure to fossil and wood fuel burning. The kits also helped families reduce domestic and manual labour and save money on fuel. We implemented water, sanitation and hygiene projects in Wafi-Golpu project's host villages to improve water security and reduce domestic labour.

Harmony's operations will likely experience climate variance, resulting in increased risks to water scarcity and intense periods of rainfall leading to floods. Some operations were affected by excessive rainfall in 2022, including:

- Kalgold, which resulted in production stoppages
- Kusasalethu, which caused the return-water dam to overflow, resulting in process water flowing into the local catchment
- Mine Waste Solutions repaired the return-water dam's outlet pipe at the Kareerand tailings storage facility, causing overflow into the Vaal River.

The impact was considered low for all operations. Our response strategy to improve excessive rainfall management included constructing a stormwater dam at the cost of R96 million.

Climate resilience and adaptation are key matters for our host communities. In Papua New Guinea, the country's Climate Change Management Act has a strong focus on building community resilience.

Governance

Performance,

targets and reporting

Harmony's climate change journey

Harmony has proactively positioned itself to address climate change since 2008. The company has taken significant strides in lowering its emissions and managing energy and water use across its operations. We took a decision to redirect capital towards projects that will progress our objectives of decarbonising and addressing climate change. While much progress was made through to the end of FY21, FY22 was a significant year in the evolution of Harmony's policy and corporate commitments.

In October 2021, we updated our climate change and energy policy and our climate change policy and energy efficiency strategy. Achieving the objectives of the Paris Agreement necessitates physical changes to our environment and societal and economic mobilisation.

Harmony's energy efficiency and climate change policy statement evolved in response to the transitional and physical risks and impacts of climate change. Our strategy aimed to give effect to the policy statement. The strategy focuses on the following key areas:

Our strategy outlines the background to the key performance indicators, which in turn set out the targets and their implementation at an operational level.

We achieve our policy statement and strategy through the following:



Strategy continued



$\equiv \langle - \rangle \bigcirc \bigcirc$ Strategy continued

Upon review and in seeking to make continuous improvements against the backdrop of improving technology innovation, Harmony considered the following:

Accomplishments to date



Since 2016, Harmony has concentrated on lowering and efficiently using energy. Through its energy efficiency programme, Harmony effected R1.4billion savings; 1.5mtCO₂ and 1.3 terrawatt hours. This would be cumulative to 2022.

From FY08 to FY22, we closed some of our energy-intensive shafts that reached geological end of life considering the energy intensity required to continue operating and given the ore reserve depletion focusing more on surface portfolio assets. Our recently acquired assets, Mponeng and Mine Waste Solutions, have higher energy and emission intensities than our historic portfolio. Their influence on our overall performance can be seen in the graphs on page 9. We are exploring opportunities to reduce these emissions intensities. The rebalancing of our portfolio is strengthened by our increased focus on copper and uranium, which can contribute to the global transition to a low-carbon economy.

Forward outlook

producers, which includes solar energy,

wind energy, and electricity generated

under feasibility or in the build stage.

from natural gas. These projects are either



agriculture, and water beneficiation. More specifically, Harmony focuses on water resource management as well as biodiversity management action plans and land rehabilitation.

During January 2022, we completed our SBT submission, which is being validated by the SBTi. We secured a green loan of R1.5 billion to fund Phase II of our renewable energy programme, which is linked to our net-zero target of 2045.

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Performance and targets

Harmony's total GHG emissions for FY22 were 5.84 mtCO₂e, with the largest portion of emissions attributed to Scope 2 (79%), as shown in figure 3 below. Scope 1 GHG emissions in the figure below relate to increased diesel consumption in back-up diesel generators due to load-shedding in South Africa. We received less than our targeted rates of grid electricity supply in Papua New Guinea on account of third-party generator outages, the impact of El Niño and the use of mobile diesel compressor at Hidden Valley.



Figure 3: Harmony's total GHG emissions in FY22

In FY16, Harmony set two 10-year GHG emissions intensity targets, through to FY26 using an FY14 base year. The first target relates to tonnes CO_2 /tonne ore milled and the second to tonnes CO_2 /kg of gold produced.

As of FY22, Harmony has now also introduced our net zero by 2045 target, which involves net reduction of total emissions by $206ktCO_2e/year$, against an FY21 base year.





Figure 4: Harmony's GHG emissions intensity for FY22



Figure 5: Harmony's GHG emissions intensity percentage change from the FY14 baseline

Progress on our 10-year target to date includes a 39% decrease in emissions intensity per tonne of ore milled against an FY14 baseline. This decrease was largely due to our energy efficiency programme and portfolio rebalancing to focus on fewer energy-intensive resources.

The decrease from 12% below baseline in FY20 was partly due to acquiring Mine Waste Solutions. This operation processes surface materials with low-energy consumption.

FY22 saw an increase to 39% below baseline from 42% below baseline in FY21 owing to the integration of new operations, Mponeng mine and related assets, into Harmony's portfolio from October 2020. Scope 1 and Scope 2 emissions of these assets accounted for 23% of Harmony's total emissions in FY21.

In FY22 our GHG emission intensity per tonne of gold produced increased by 33% against an FY14 baseline. The initiatives above resulted in a reduction of 13% below the baseline in FY19. Mponeng was a recent acquisition and we feel confident that in aligning the operation to the Harmony way, we will realise opportunities to further improve our efficiencies. The intensity increased to above the baseline in FY22 partly due to Mponeng's high energy consumption, and the low grade of the surface materials processed by Mine Waste Solutions.

Noting that our previous targets period was coming to an end in FY22, we have revised our targets with a baseline of FY23 running up to FY27 including:

- 25% renewable energy implemented
- Reduce absolute Harmony group emissions down to 3.9 million tonnes of CO,
- 10% reduction in potable water consumption
- 10% reduction in water intensity (kl/tonnes treated)
- Recycle 50% of Harmony's water consumption.

Energy efficiency

In South Africa, Eskom is Harmony's electricity provider, which mainly relies on coal-fired power stations.



We implemented and maintained multiple energy optimisation projects across 68 operational systems in FY22, which resulted in an estimated energy cost saving of R365 million of which R22 million is savings from FY22. These systems include compressed air, refrigeration, water reticulation and ventilation. The company-wide integration and resilience of our previous Energy Efficiency and Climate Change Strategy (2010) is a testament to our efforts to reduce energy use and GHG emission. Under our updated policy and strategy, we plan to implement various energy efficiency capital projects that aim to increase energy savings.

Our energy efficiency initiatives focus on mine cooling, compressed air, water management and ventilation. These initiatives saved R365 million for FY22, of which R22 million originated from new projects (the difference reflects ongoing savings from earlier projects). To date, we have implemented over 200 energy efficiency initiatives at our operations, with cumulative savings of around R1.35 billion. The energy efficiency programme approach considers the following:

- Energy management teams at South Africa operations
- Infrastructure to enable energy metering and management
- Baseline electricity consumption at all operations
- Exploration, identification and investigation of optimisation opportunities
- Implementation of optimisation strategies and capital projects
- Maintenance of implemented initiatives
- Reporting and management controls
- Awareness programmes to encourage energy conservation.

Hydro-power supply in Papua New Guinea

In Papua New Guinea, most electricity is obtained from the country's Ramu grid. The primary generator for the Ramu grid system is the Ramu hydro-power plant. Grid reliability is low, which led to the Hidden Valley operation utilising back-up diesel generators to address shortfall when grid supply targets were not met. This has been exacerbated by the El Niño droughts, which are anticipated. Papua New Guinea (PNG) has been suffering from drought and frost caused by the El Niño Southern Oscillation (ENSO) phenomenon since mid-2015.

The Hidden Valley operation is proximal to the 9.4MW Upper Bauine hydro-power station, owned by PNG Forest Products Hydro, an independent power producer that supplies the Ramu grid.

In FY22, grid-operator PNG Power, PNG Forest Products Hydro and Harmony's Hidden Valley operation made good progress with commissioning and testing the "Bauine Switch", which will allow the Hidden Valley operation to be isolated from the Ramu grid and receive power from the Upper Bauine hydro-power station. Although limited to 9MW (similar to the percentage received from the grid), supply is expected to be more stable and reliable. Parties anticipate the implementation of this agreement in FY23.

PNG Forestry Products Hydro is constructing the 11.4MW Baime hydro-power station and targeting the station's commissioning by February 2023, which may present further opportunities.

Diversification of energy portfolio mix in South Africa

Harmony is working toward diversifying the energy portfolio mix through small-scale and largescale projects. We decided to invest in small-scale solar projects to expedite our renewable energy drive. Projects include rooftop solar projects at our offices and administrative buildings across Harmony's footprint. In July 2022 the threshold for exemption from license requirements for self-generation projects was removed. This provides an opportunity for Harmony to reduce our GHG emissions and pursue renewable energy more aggressively in South Africa.

Our solar photovoltaic (PV) energy initiative is planned in three phases. The first two phases are underway, for 30MW and 137MW of installed capacity respectively. Off the back of Phase I of the renewable energy programme, Harmony secured a R1.5 billion green loan for Phase II rollout. Phase II is currently in the feasibility stage. The feasibility study phase's completion is planned for December 2022. Phase II is planned to reach commercial operation by Q3/Q4 2024.

Harmony is exploring options for liquefied natural gas (LNG) or synthesis gas. Although not renewable, we are considering LNG in the mix to lower emissions intensity of our power requirements relative to the predominantly coal-fired South African electricity grid. Table 1 highlights our planned energy diversification pipeline for South Africa, which emphasises renewables and will support our decarbonisation targets.

Energy diversification rollout plan

Parameter	Phase 1 PV	Phase 2 PV ¹	Phase 3 PV	Wind wheeling	LNG
Size of plant (MW)	30	137	56	100	60
Energy generated per year (GWh)	75	343	139	250	525
Full production year	FY23	FY24	FY25	FY24	FY25

¹ Additional 20MW for Phase II pending the Doornkop site identification.

Table 1: Harmony planned energy diversification pipeline (South African operations)



Figure 6: Low-carbon energy generated

Grid decarbonisation

Harmony's emissions mostly comprise Scope 2 emissions, relating to energy purchased from the grid. Scope 2 emissions in our South African operations depend on the grid emission factor. South Africa intends to decarbonise its grid, which will reduce our Scope 2 emissions. The reduction in national grid emissions in the integrated resource plan is primarily due to the retirement of coal-fired power plants. Most of these plants are forecast to be decommissioned by 2042, and only Medupi and Kusile are expected to be operational.

Our net-zero target

In January 2022, we submitted our net-zero target to SBTi for validation. Our target is to decrease Harmony's total emissions by $206ktCO_2e$ annually. This is based on the annual reduction of 4.2% of the base year amount. This is based on the SBTi requirements for a net-zero target aligned with Business Ambition for 1.5°C. This results in the following interim emission targets:

- 2026 3.9MtCO₂e
- 2031 2.8MtCO₂e
- 2036 1.8MtCO₂e.

If the same rate of emission reductions continues beyond 2036, Harmony can achieve net zero in 2045.

Based on emissions forecasts, Harmony is projected to meet the 2026, 2031 and 2036 targets, provided South Africa's grid decarbonises as projected in the integrated resource plan and Harmony implements its planned initiatives. Beyond 2040, a range of challenges will need to be addressed, including consideration of further mitigation outside our value chain to reach net zero. These could include enhancing carbon sinks or carbon sequestration.

Our emissions forecast factors in the Wafi-Golpu project, which is a key driver of emissions beyond 2040. This project has not yet received a special mining lease from the Papua New Guinea Government, nor has development been board approved by its joint venture participants. The Wafi-Golpu project feasibility study was prepared in 2018, and assumes self-generated, fossil-fuel-based power solutions. Prior to any board approval of this project, we will actively investigate options to reduce emissions to align to and support our 2045 net-zero target.



Figure 7: Total annual energy supply for Harmony operations

Water

Reliable water supply is critical for developing our assets, the mining process and realising our growth prospects. We have a thorough understanding of water management and water risks across the operational spectrum. We integrated the management of water security and water-related risks into our long-term business objectives, our business strategy and our financial planning. Harmony's commitment to responsibly managing water usage is driven from an executive level and has evolved from a strategy into practical and relevant actions across the group.

Harmony's water strategy sets out objectives related to water conservation, efficient water use, and the necessities surrounding water supply in the context of its host communities, including:

- Integrating water management and efficiencies
- Acknowledging water-related risks regarding climate change
- Planning for water management at mine closure
- Recognising water as a critical resource for local communities.



Harmony has the opportunity to reduce its operating costs and alleviate water availability pressures experienced by our host communities through reusing and recycling its water. Harmony's water strategy supports the shift towards self-generation and zero discharge of water where it is practical to do so, to encourage the group's water conservation and demand management objectives. Harmony prioritises the conservation of potable water, especially considering the potential worsening drought conditions in the regions in which we operate. Self-generating water will ensure we offset our consumption and allow this to be fed back into host communities.

The figure below shows our progress against our water targets, which ran up to FY22. On a non-normalised basis, potable water consumption increased considerably in FY21 and FY22, driven by the acquisition of Mponeng and related assets.



Figure 8: Progress against our water targets

Harmony adopted a group-wide campaign to reuse process water and reduce our dependency on potable water from water utilities. In support of this, we set long-term targets to reduce potable water consumption by 10% and increase water recycled by 50% by FY27. To achieve these targets, Harmony implemented various water conservation initiatives.

Harmony's three water treatment plants in South Africa assist in securing water supply to our operations, while reducing water consumption and assisting with water conservation initiatives. The water treatment plants save Harmony R5.6 million in operating cost per year.

Further to our water treatment plants, Harmony continues to pump water out of our Margaret and Covalent shafts, some of which is used in treatment processes, with the remaining being discharged. This surplus water could provide Harmony with water resources to adapt to future water-stressed conditions. With the physical impacts of climate change posing potential threats to water security in South Africa, water from Covalent and Margaret water became strategic assets for community upliftment and operational growth and development.

In 2018, the Wafi-Golpu joint venture initiated a water, sanitation and hygiene (WaSH) programme to target 19 projects in the proposed special mining lease (SML) and Demakwa access road area, which is home to over 5 000 persons. Projects aim to improve sanitation and support communities' water security. Five projects were completed prior to the Covid-19 pandemic. In FY22 the WaSH programme resumed and we completed two projects in Zimake and Levilivan (Fly Camp) village, benefiting around 350 village residents. The remaining 10 projects are being scoped, and we hope to complete these during FY23 and FY24.

Strategic direction

Harmony is committed to achieving net zero by 2045 including via interim SBTs that are in line with SBTi Business Ambition for 1.5°C. We look forward to the validation of our submission to the SBTi.

FY22 was a significant year in the evolution of Harmony's policy and corporate commitments. The revision of our Energy Efficiency and Climate Change Policy in 2022, and the accompanying body of work, underpinned our net zero by 2045 commitment and established our new corporate targets. The company made tangible strides to and investment in new renewable energy projects. We participate in business and mining industry initiatives that support decarbonisation. In the community development space, we embarked on initiatives to support our host communities' climate resilience.

Outlook

We will continue on our strategic path, and we look forward to the challenges ahead. Our commitment to reporting against the TCFD remains a priority.

Harmony's various strategies will enable meaningful change, and we are confident in our ability to meet our targets. Our commitment to net zero drives our ambitions and enables the transition to a low-carbon economy. Our progress to date and commitment to strategic decision making ensure that we are well placed to continue on our journey.