



FIRST QUANTUM  
MINERALS LTD.

**TASK FORCE ON CLIMATE-RELATED  
FINANCIAL DISCLOSURES (TCFD) ALIGNED**

# CLIMATE CHANGE REPORT

February 2023

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Cover image: Çayeli Bakır, a wholly-owned subsidiary of First Quantum	Cover Page
The graphs indicate projected demand for copper and nickel under the International Energy Agency (IEA) Sustainable Development Scenario. This scenario has been used in the Company's climate risk analysis and represents our moderate transition scenario, which is aligned to the Paris Agreement Goals. (IEA, The Role of Critical Minerals in Clean Energy Transitions, 2021)	4
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# MESSAGE FROM THE CEO



**Tristan Pascall**

Chief Executive Officer

At First Quantum, we're proud of the contribution that mining makes to our communities and society. As a responsible miner, we have taken a tangible approach with real actions to address climate change and to deliver copper and nickel that is critical to the decarbonisation of global energy systems.

Following the commitments outlined in our 2021 Climate Change Position Statement, we published our first Climate Change Report in January 2022. In this Taskforce on Climate-related Financial Disclosures (TCFD) aligned report, we set greenhouse gas reduction targets consistent with a 1.5°C trajectory, and established internal carbon pricing for the evaluation of new projects.

Climate change presents our business with opportunities relating to the transition to a low carbon economy, but also challenges for our operations in managing resilience to the physical impacts of climate change.

We are committed to transparency in our climate change reporting as we highlight our strategy for ensuring the resilience of our operations to climate-related risks and the process by which we harness opportunities.

Since the publication of our targets, we have focused on progressing the projects that will enable us to deliver on these commitments. Decarbonisation of the power used by our operations, particularly in Panama and Zambia, is key to the achievement of our greenhouse gas emissions reduction targets. In Panama, we have signed a renewable power agreement with AES Panama for the CP100 expansion from 2024, which represents an important first step towards reducing the proportion of coal power used by Cobre Panama. In Zambia, we announced an early stage project with Total Eren and Chariot Power for a wind and solar project to further increase the renewable power used by our Zambian operations.

Our climate change approach is based on established, tangible projects that deliver real outcomes. Decarbonising power is vital to achieving our targets. Also key to our climate strategy is how we use energy more efficiently to also lower the carbon footprint of the metals that we produce and manage our costs in the current high energy price market. Investing in our people and continuing to leverage innovation and technology in mining remains core to First Quantum's culture, and in continuing to improve and grow our business.



# CLIMATE CHANGE STRATEGY

## INTRODUCTION

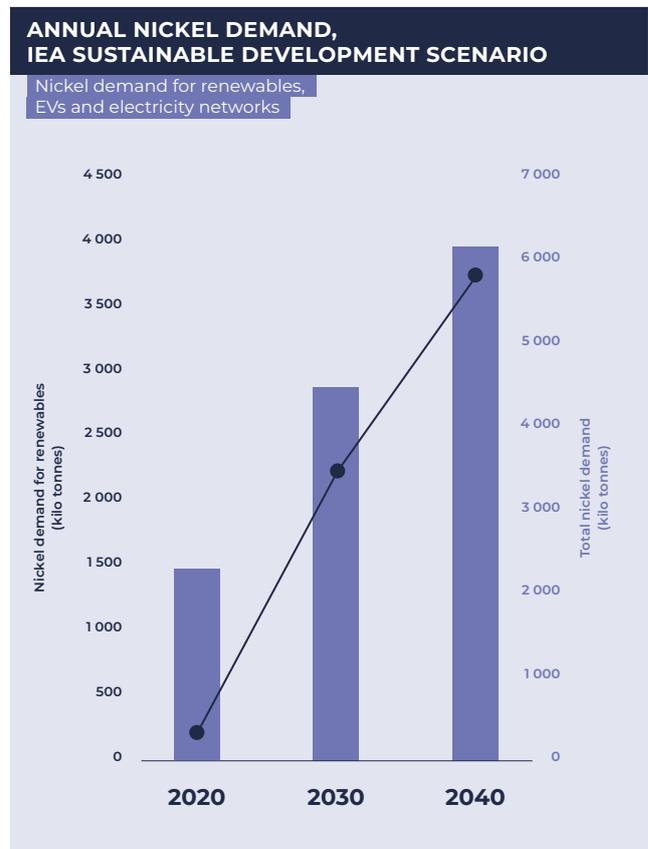
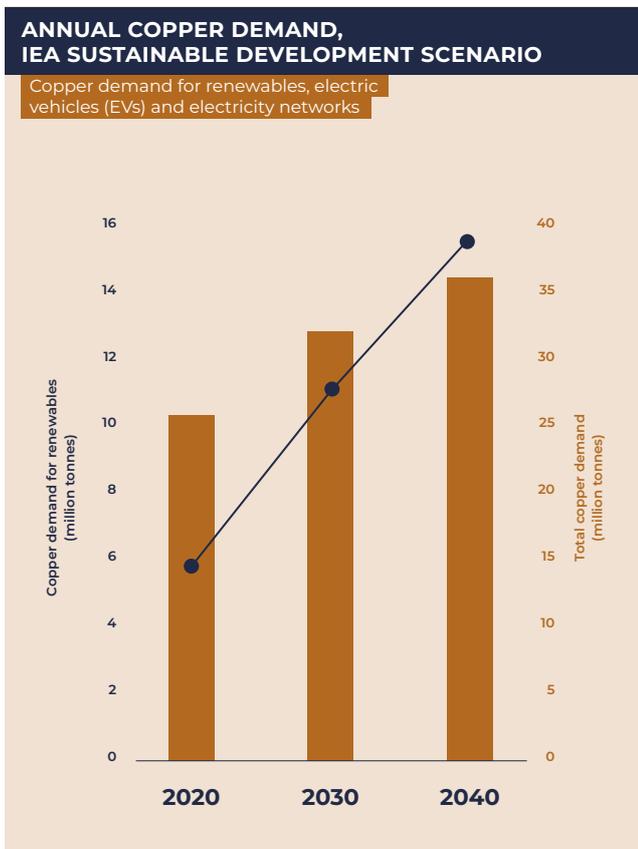
First Quantum is one of the world’s leading copper producers with a strong portfolio of brownfield and greenfield development projects that are expected to grow our business towards 1,000,000 tonnes of annual copper equivalent production in the near term.

First Quantum is also well-positioned to become a leading producer of nickel, with the Enterprise project in Northwestern Zambia which is expected to commence production in 2023, in addition to the Ravensthorpe mine in Western Australia.

The metals we mine will play a critical role in the energy transition with increased use of renewable energy infrastructure, electrical grid development and electric vehicles expected to drive a significant increase in demand.

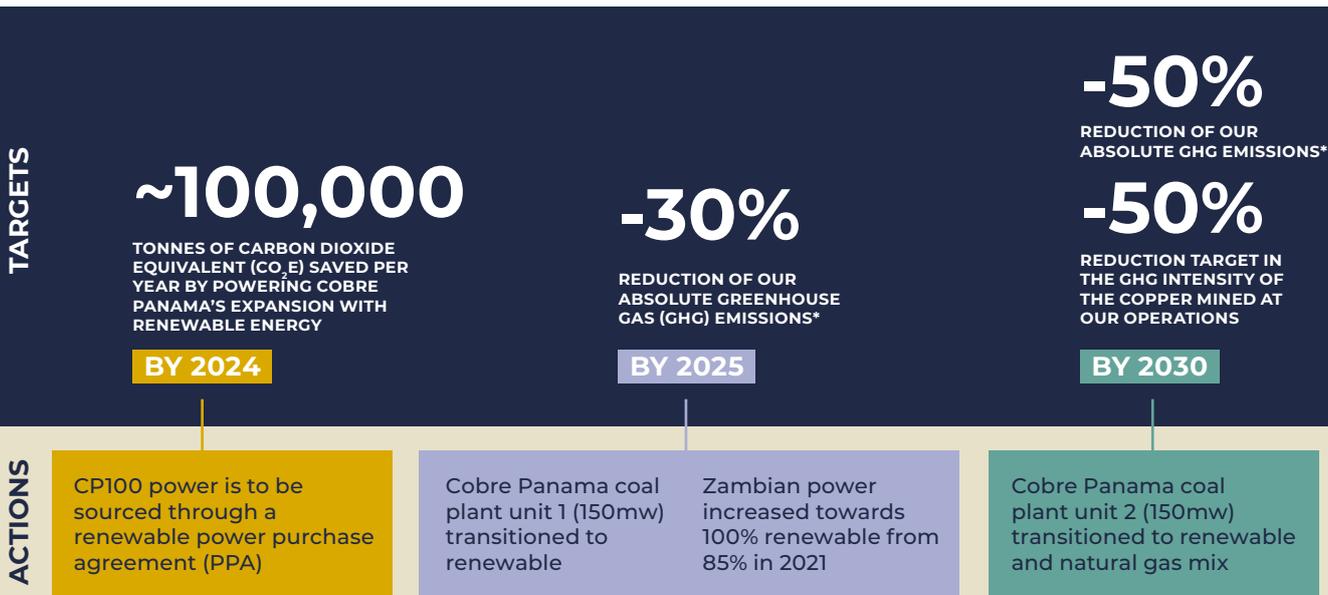
At First Quantum we recognise our role in producing metals vital for the transition to a low carbon economy, and our responsibility to take direct action at our operations to address the global climate change challenge.

The Company’s strategy on climate change aligns with our broader approach of responsible mining which is embedded in First Quantum’s operating model. We look to execute tangible projects which drive better operating performance while delivering an improved environmental and social profile.



## Core principles

In keeping with First Quantum’s commitment to responsible mining, the Company’s climate change strategy is focused on lowering the carbon intensity of copper and nickel produced at the Company’s mines.



## Climate change commitments

- ✓ Ensure resilience to climate change through the identification and management of climate-related risks through effective mitigating measures. The Company plans to invest appropriately to improve the climate resilience of our operations.
- ✓ Commitment to ongoing development and transparency of climate change reporting and progress in achievement of targets.
- ✓ Engagement with stakeholders on climate actions and progress.
- ✓ Continue to develop an understanding of lifecycle emissions of the value chain.
- ✓ Consider ongoing partnerships with suppliers and customers on emissions and how to reduce the carbon footprint.
- ✓ Improve efficiency, energy intensity and reduce wastage and emissions by leveraging our innovative culture and new technologies as they become commercial.
- ✓ Prioritise use of renewable energy sources for new and existing operations where they are achievable.
- ✓ Internal carbon pricing is integrated into the evaluation of new projects.
- ✓ Set tangible targets through the execution of real projects.

\*The Company's GHG emissions reduction targets are based on Scope 1 and 2, with 2020 as the base year.



## Pillars of our climate change strategy

### Decarbonisation of power



Ensure a just transition that achieves sustainable and affordable power for our host communities as well as our operations.

Prioritise the use of renewable energy at new and existing projects where feasible.

Deliver lower carbon intensity copper and nickel that is essential to the development of electricity networks, renewable energy infrastructure and electric vehicles.

### Drive efficiency



Improve efficiency of energy used at operations, reducing GHG emissions and energy.

Reduce wastage and increase the reuse of water at operations through incremental and continuous improvement projects across our operations.

Work with Original Equipment Manufacturers (OEMs) to leverage new technologies as they become commercially viable while leveraging the Company's technical expertise and innovative culture.

### Approach for new projects



Implementation of carbon pricing for the evaluation of new projects which grow production.

Identify feasible sources of renewable power.

Application of innovative technologies such as trolley assist, in-pit crushing and conveying and other operational learnings to lower carbon footprint of new projects.

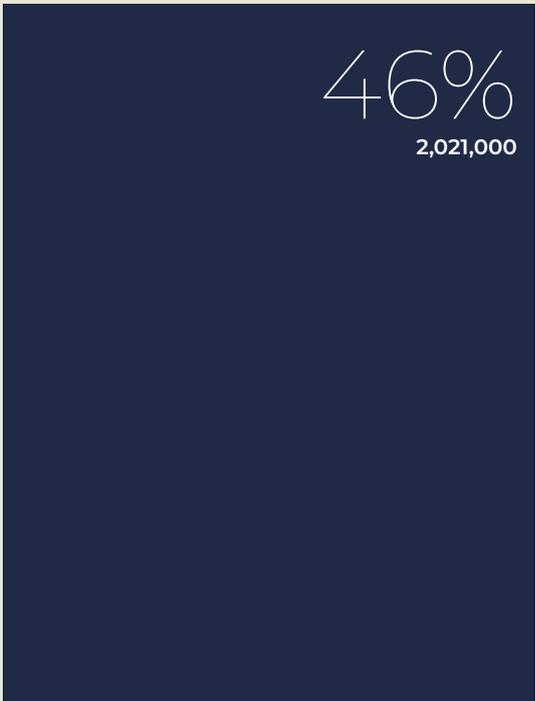


# Targets and actions – Scope 1 and 2 emissions

**2021**  
4,440,000 tonnes CO<sub>2</sub>e

**2030 TARGET EMISSIONS**  
2,130,000 tonnes CO<sub>2</sub>e

COAL\*



**Decarbonising Cobre Panama power**

**STEP 1 – ACHIEVED**

- ✓ Renewable energy for CP100 from 2024
  - Up to 20% renewable power

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**STEP 2**

Transition Unit 1 (2025)

- Up to 60% renewable power

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**STEP 3**

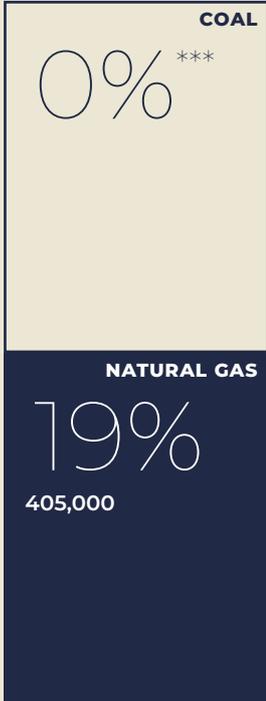
Transition Unit 2 (2030)

Complete transition away from coal power at Cobre Panama

- Up to 80% renewable power

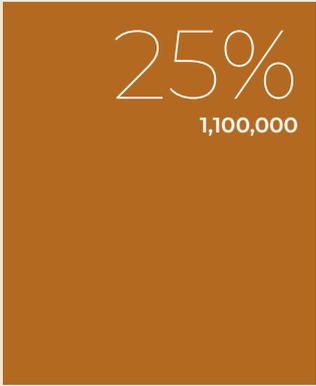
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Power study to inform pathway for Step 3 and guide Step 2, and to enable complete transition from coal-fired power at Cobre Panama.



% of total emissions

FUEL



**Energy efficiency and technology**

Focus on continuous improvement to leverage technology and innovative culture to continue to drive efficiencies.

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Expansion of initiatives such as trolley assist, fuel optimisation through rolling resistance programmes, blast optimisation to reduce energy use

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Evaluation and implementation of new technologies, such as railveyor and ore sorting

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Working with OEMs on the application of new technology as they become commercial.



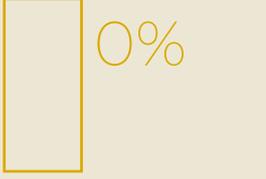
ELECTRICITY\*\*



**Wind and Solar project in Zambia**

Early stage development project. Working with Chariot Energy and Total Eren to further increase renewable power provided to Zambian operations from 85% currently.

- Towards 100% renewable



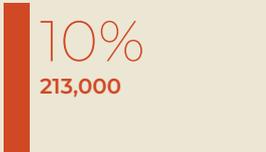
ORE LEACHING



Leached ore emissions principally relate to the treatment of oxide ore at Kansanshi and represent some of the hardest to abate emissions, requiring developments in technology and potentially the use of carbon offsets, or alternative solutions. Over the mine life, the proportion of oxide ore processed will continue to reduce.



OTHER



\*Coal for Cobre Panama operations

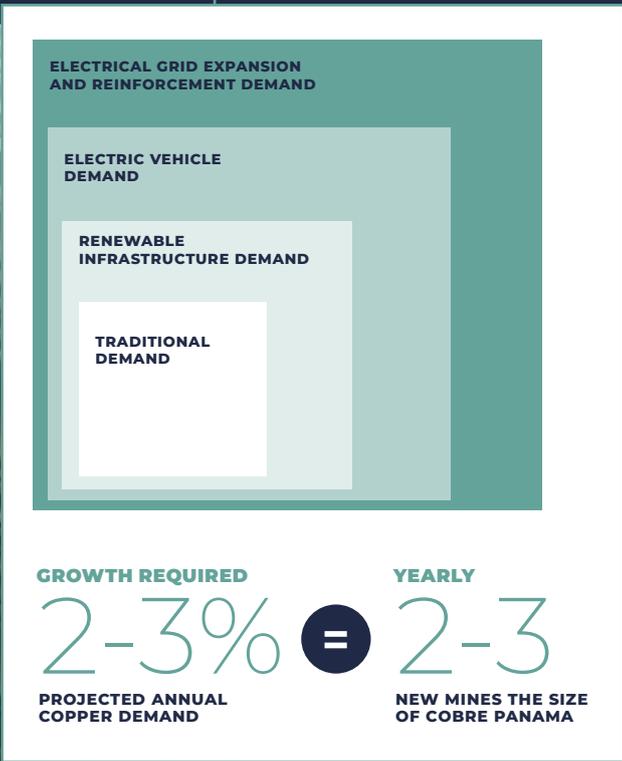
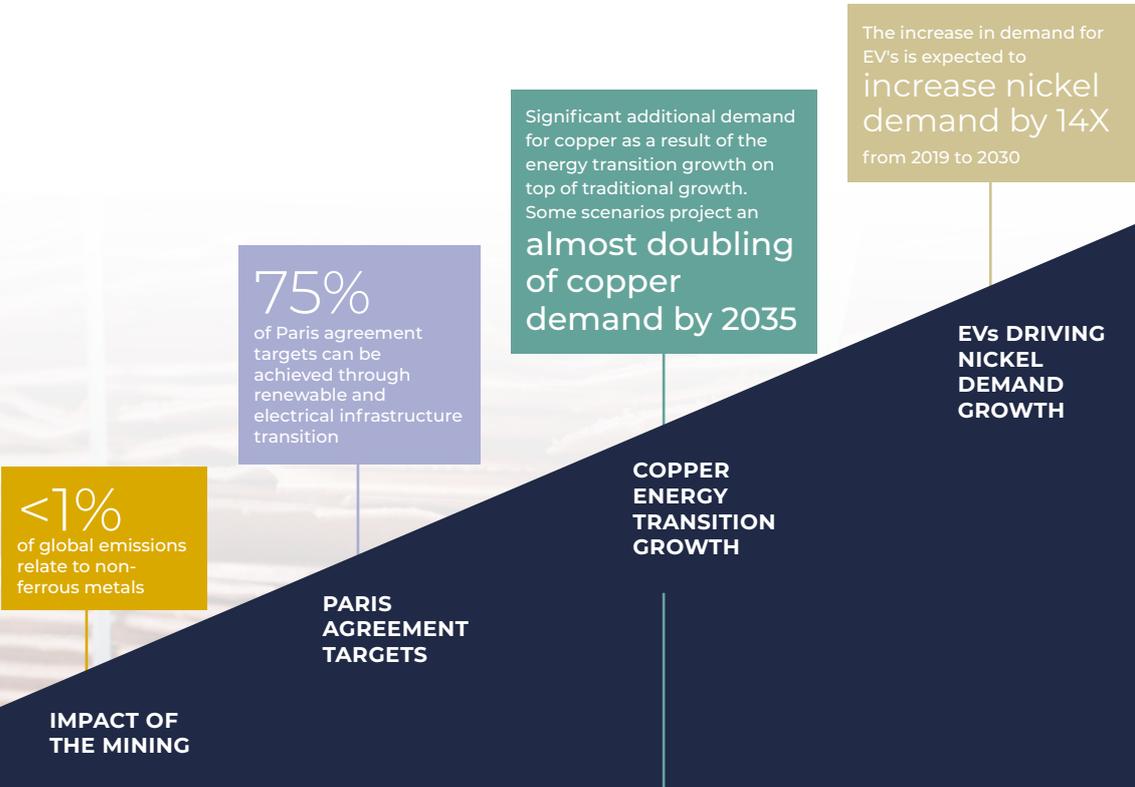
\*\*Electricity provided from the grid to the Company's Zambian operations.

\*\*\*Dependent on seasonality and availability of renewable energy sources.



# Our metals are fundamental to the low-carbon transition

The shift from a fuel based energy system to a minerals based energy system is expected to drive additional demand for copper and nickel.



# Copper's role in the global low carbon transition

Mining is integral to meeting the challenges of climate change and in decarbonising global energy infrastructure.



## Opportunities for our metals

At First Quantum, we are proud of the contribution that we make with the metals that we mine and the work that we do with our host communities.

At First Quantum we have extensive experience in executing and delivering major projects. As the global demand for copper and nickel increases we want to be the partner of choice to develop new mines. In the last ten years, we have more than doubled our copper production to around 800,000 tonnes per year.

As the world's 6th largest copper producer, and a significant nickel producer, our metals will enable the global transition to a low carbon economy.

**Copper's high conductivity and antimicrobial properties make it important across a range of uses today:**



200kgs

of copper in the average household, used for wiring, plumbing and electrical appliances



632,000 ft

of copper wiring used in the average Boeing 747



500+

copper alloys registered with US Environmental Protection Agency for antimicrobial use



Renewable infrastructure needs mining for the supply of essential minerals such as copper and nickel.



Increased use of EVs means more copper and nickel needed than for traditional internal combustion engine vehicles.



More electric vehicles will require expansion and reinforcement of electrical grids.



The electrification needed by emerging economies for economic progress requires our metals.



Our mining projects support and encourage socioeconomic development through our workforce, local company supply chain participation and direct economic contributions to governments.



7x

TONNES OF COPPER REQUIRED FOR OFFSHORE WIND POWER COMPARED WITH COAL



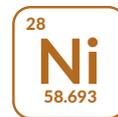
50kg+

COPPER REQUIRED FOR AVERAGE ELECTRIC CAR COMPARED TO 22KG IN CONVENTIONAL CAR



Nickel

is not used in conventional cars, however EVs require 40kgs of nickel.



60% more

nickel was used in newly sold passenger electric vehicles globally in 2021 than in 2020.



## Performance and outlook

IN 2021

OVER

1 100 000

TONNES OF CO<sub>2</sub>E SAVED ANNUALLY THROUGH THE OPERATION OF THE KANSANSHI SMELTER

ALMOST

100 000

TONNES OF CO<sub>2</sub>E SAVED ANNUALLY THROUGH ZAMBIAN PIT ELECTRIFICATION

77%

OF THE GROUPS PURCHASED ELECTRICITY CONSUMPTION IS HYDRO-ELECTRICITY

80%

OF PURCHASED ELECTRICITY CONSUMPTION IS FROM RENEWABLES

4% 

INCREASE IN GHG EMISSIONS

11% 

INCREASE IN ENERGY CONSUMPTION

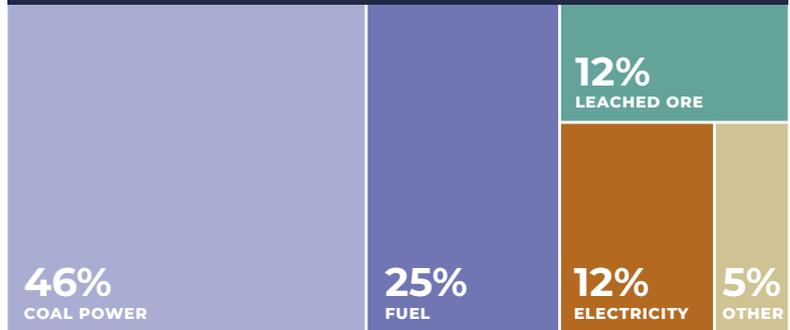
5% 

INCREASE IN COPPER PRODUCTION

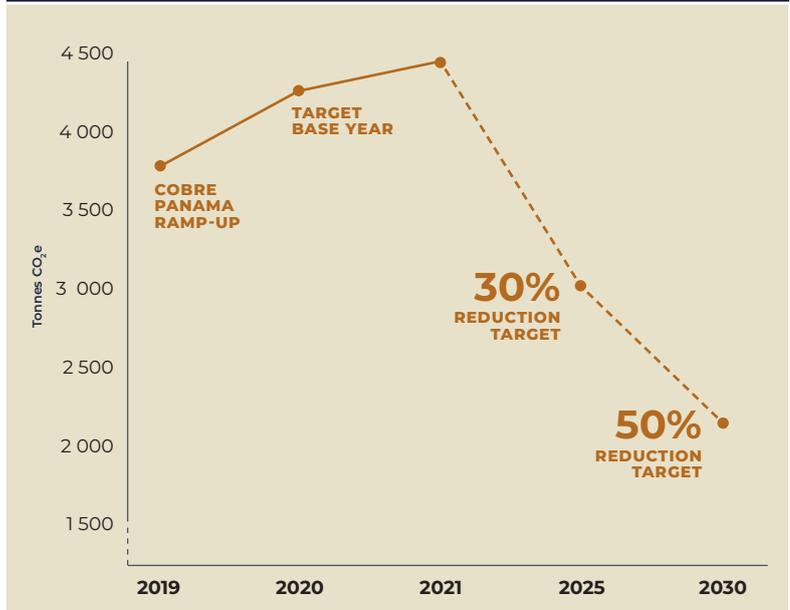
32% 

INCREASE IN NICKEL PRODUCTION

### 2021 SCOPE 1 & 2 GHG EMISSIONS – 4,440,000 TONNES CO<sub>2</sub>E



### FIRST QUANTUM GHG EMISSIONS (SCOPE 1 & 2)

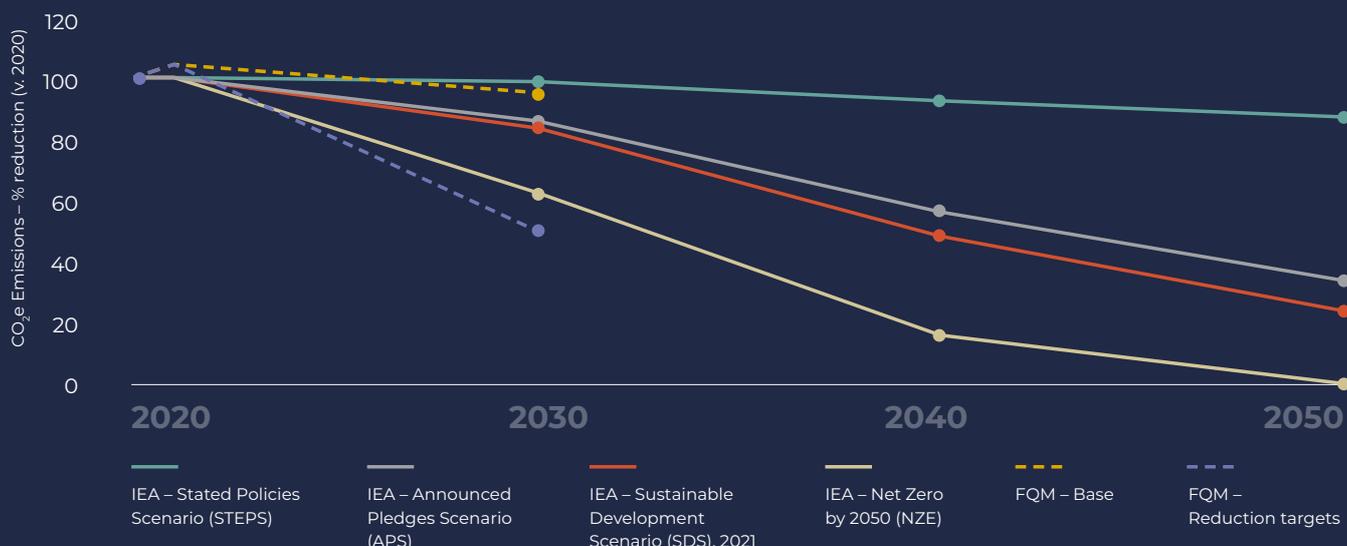


Our GHG emissions reduction target base year, 2020, represented the first full year of operations at Cobre Panama following the commissioning and ramp up to commercial production, declared in September 2019. 2020 GHG emissions were lower than at normal operating levels, reflecting the COVID-19 health and sanitary controls at Cobre Panama which significantly impacted mining and processing activity in the second and third quarters. 2021 represents the first year of Cobre Panama operating at full capacity (prior to CPI00 expansion).

Decarbonisation of power is expected to provide the step reductions in GHG emissions to achieve our targets and provide energy efficiency benefits. Cobre Panama will be key to this strategy, where operations are expected to completely transition away from the use of coal power by 2030.



FIRST QUANTUM TARGET PATHWAY COMPARED WITH CO<sub>2</sub>e EMISSIONS REDUCTION PATHWAYS, IEA WEO 2022 CO<sub>2</sub>e EMISSIONS  
 BASED ON DATA FROM INTERNATIONAL ENERGY AGENCY (IEA), (2022), AS MODIFIED BY FIRST QUANTUM



## Approach to Net Zero

The Company's GHG emissions reduction targets have an identified pathway to achievement and are based on commercially available solutions. For this reason, we have not made a net zero commitment at this time. We will continue to monitor the development of new technologies for implementation at our operations as they become commercially viable, and where possible update our GHG emissions reduction targets accordingly.

## Operating costs

The Company is committed to increasing the use of renewable energy at operations to achieve its GHG emissions reduction targets. Furthermore, ensuring the reliability of power to our operations, as well as the competitive cost of this power in the current market are equally important considerations as we transition to cleaner energy. The operating cost of renewable energy, required for the achievement of the Company's GHG emissions reduction targets, is not expected to result in significant increases in operating costs compared with the current cost of power. In Panama, this is inclusive of depreciation and the coal collar pricing mechanism that is in place until the end of 2023.

## Commitment to actions on Climate Change

Sustainability is embedded into the First Quantum operating model. Projects that drive lower GHG emissions and/or reduce the carbon intensity of the

copper and nickel produced by the Company, are also expected to deliver a range of operational benefits such as increased production, improved operating efficiencies and lower costs.

## Capital expenditure

No significant capital expenditure is expected to be required to decarbonise the power used by our operations, and with limited capital required prior to 2025.

Included within the Company's \$2.6 billion, 3-year project capital expenditure guidance, are a number of initiatives expected to deliver climate change benefits.

These projects target improved energy efficiency, enhanced water usage and reduced absolute and/or intensity of greenhouse gas emissions.

- ♦ **Upgrade of the Kansanshi smelter** to increase processing capacity, which reduces downstream greenhouse gas emissions from the transport and refining of copper concentrate produced by Kansanshi and Sentinel.
- ♦ A **wind farm at Ravensthorpe** to reduce reliance on power from diesel back-up generators, subject to final approval.
- ♦ **Expansion of trolley assist** infrastructure across the Company's three largest mines to lower diesel consumption and associated mine fleet greenhouse gas emissions.
- ♦ Relocation and installation of **in-pit crushers** to optimise haul cycle efficiency and reduce mine fleet diesel consumption.
- ♦ **Water initiatives** at various sites for the management of water quality and reuse by operations.



# GOVERNANCE

The Board executes many of its responsibilities through its Committees.

The Environment, Health, Safety and Corporate Social Responsibility (EHS&CSR) Committee, comprising independent directors, is responsible for the review and monitoring of the suitability and effectiveness of the Company's risk management policies and processes with respect to climate change as defined in the Committee charter.

The EHS&CSR Committee also monitors adherence by the Company to its environment, health and safety and, social policies and practices in accordance with applicable environmental, health and safety laws and regulations.

Members of management responsible for climate change report to the EHS&CSR Committee at each meeting and are available to answer questions raised by EHS&CSR Committee members. This committee meets four times a year.



**Kathleen Hogenson**

Chair



**Simon Scott**



**Joanne Warner**



**Kevin McArthur**



**The Human Resources Committee is responsible for the review, identification and mitigation of risks associated with the Company’s compensation policies as well as for making any necessary determinations relating to executive compensation.**

The Human Resources Committee considers external relations as performance objectives in determining total compensation for executives. External relations encourages the development of responsible and effective business relationships with appropriate governments, agencies, regulators, financial institutions, and our shareholders through our investor relations programme and broader engagement initiatives (for example in respect of Environmental Social and Governance (ESG), inclusive of climate change issues).

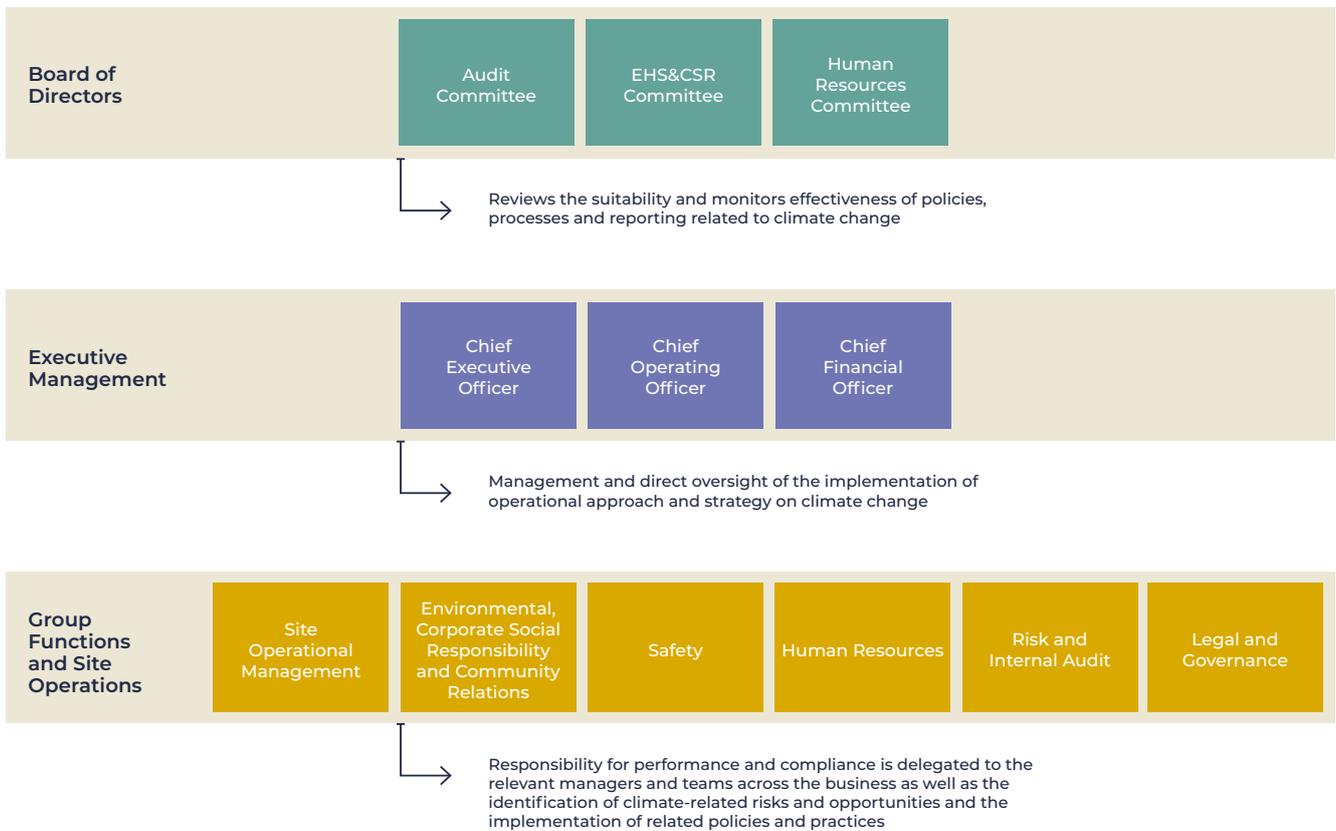
**These external relations factors are summarised below:**

<b>Environment</b> 	<b>Social</b> 	<b>Governance</b> 
<ul style="list-style-type: none"><li>◆ Longer-term business strategy with project identification and approval influenced by potential impacts on the environment and climate change.</li><li>◆ Measures linked to sustainable and innovative mine operations that are intended to reduce environmental impact.</li></ul>	<ul style="list-style-type: none"><li>◆ Measures linked to the performance and engagement of our workforce.</li><li>◆ Measures linked to the health and growth of our relationships with external stakeholders, including the communities in which we operate.</li></ul>	<ul style="list-style-type: none"><li>◆ Measures linked to safe operating procedures, mitigating workplace injuries.</li><li>◆ Ensuring business practices and decisions are conducted with appropriate judgement.</li><li>◆ Ensuring compensation decisions are made within an effective governance framework.</li></ul>



**The assessment and management of climate-related issues are actively monitored by the Company’s management as part of regular operational and technical planning at each operation.**

Considerations include regulatory, market and policy impacts and the integration of climate-related issues into strategic and financial planning. Business planning also incorporates climate-related issues in the targeting of innovation projects to deliver improvements to operational, environmental and social performance. GHG emissions are reviewed as part of the annual budgeting process and aligned to site operational planning. Carbon pricing is used in the evaluation of new projects to ensure resilience to transitional climate risk as well as incentivizing the use of lower carbon alternatives.



# INNOVATION IN MINING IS INTEGRAL TO FIRST QUANTUM'S PHILOSOPHY

We have an established practice of working in collaboration with equipment manufacturers to deliver improvements in productivity and profitability as well as greenhouse gas emissions savings and health & safety benefits.

## Leading with Trolley Assist

This is evidenced by our successful implementation of trolley assist (TA) technology for our mine fleets at our largest operations.

Over the last decade, First Quantum has emerged as one of the industry leaders in the implementation of TA technology across mine planning and design, installation, operations, and maintenance. TA has delivered enhanced operational haulage performance through increased productivity, lower overall operating costs, as well as reduced GHG emissions.

## Swapping diesel for electricity

- The use of electrical power from the grid provides increased speed on a gradient and an extended engine overhaul interval due to a reduced load factor.

## Complex execution

- The TA system has been aligned to specific haul truck manufacturers, while we also developed the hardware required for the electrical supply into our operations for TA as well as the associated transformers, E-Houses and trolley line deployment systems.

## Decarbonisation

- TA contributes to significant GHG emissions reductions at our Kansanshi and Sentinel mines, where more than 85% of power drawn from the grid by our operations is renewable.

## Looking ahead

Looking to the future, we see a number of ways that TA technology can be used to further improve First Quantum's operational and energy efficiency. Our long-term life-of-mine plans include significant expansion of TA technology.

We will continue to prioritise the use of renewable energy where possible as well as work with our partners to develop technology essential for decarbonisation. TA technology offers the potential for future integration with battery technology that will be key to the further abatement of GHG emissions.



TARGET FOR UP TO

50%

OF MINE HAUL CYCLES UNDER TROLLEY



~8KM

OF TROLLEY LINES INSTALLED AT COBRE PANAMA, SENTINEL & KANSANSHI



MORE THAN

110

TROLLEY-ENABLED MINING TRUCKS



~25,000

TCO<sub>2</sub>E SAVED IN 2021 THROUGH TROLLEY ASSIST IN ZAMBIA



UP TO

90%

OF DIESEL SAVINGS ON HAUL ROAD UP RAMPS



## Developing community resilience against climate change

At First Quantum our comprehensive sustainability strategy is embedded into our operating model and informs our approach to engaging with our local stakeholders. We recognise that climate change may have disruptive impacts on our host communities. The Company has long supported projects aimed at improved access to water, sustainable agriculture and reforestation for the communities in which we operate. This in turn enables these communities, who play such an important role in our success, to become increasingly self-reliant.

### Sustainable practices

#### Zambia

The practice of slash and burn was predominantly used to clear land for farming in and around our Sentinel and Kansanshi mine sites by communities. This practice contributed to soil becoming damaged by fire limiting its water retention capacity, in turn resulting in poor crop yields. In addition, slash and burn added to habitat fragmentation, biodiversity loss and exacerbated climate change impacts. First Quantum has launched two key campaigns to discourage burning and offer sustainable alternatives:

- Conservation farming, which teaches sustainable techniques to dramatically increase crop yields while improving soil structure and protecting against erosion and nutrient loss.
- Stop Burning: Be healthier, wealthier and happier campaign, the programme is designed to complement other climate change mitigation efforts by the Zambian government.

#### Finland

The Company is involved in a project to evaluate a pumped water energy storage project using residual infrastructure of the recently closed Pyhäsalmi underground mine. This post mine closure project supports the vitality and

development activities of the local town of Pyhäjärvi. The planned pumped power plant would have an output of 75 MW and a capacity of 530 MWh. Copper production in the Pyhäsalmi mine ended in August 2022.

### Emergency response

#### Panama

During 2022 representatives from Cobre Panama met with Ministerio de Salud de Panamá, Bomberos de Panamá, Policía Nacional de Panamá, Sinaproc Panama Caja de Seguro Social Panamá and Autoridad del Tránsito y Transporte Terrestre to discuss the risks, vulnerabilities and strengths of Disaster Risk Management. The aim is to create contingency plans to safeguard the community from natural disasters and develop climate resilience.

#### Mauritania

During 2022, heavy rains caused flooding in some parts of Mauritania. The Company aided in supporting the efforts made by local authorities to mitigate the impact of flooding on Akjoujt. To assist the community Guelb Moghreïn dug a water diversion ditch of 2 000 meters in order to protect the infrastructure, with additional enhancements and expansion to existing measures. Water pumps were provided to help dewater flooded areas in Ajkoujt and sand barriers were erected to protect the hospital.



## Access to water

### Mauritania

First Quantum provides water to households and businesses in Akjoujt, which is home to about 15,000 people, as well as residents of nearby desert settlements who can access water along the Benichab pipeline. In addition, during the hottest part of the year we offer access via taps to nomadic livestock herders and people living in more remote villages. The Company has:

- ♦ Assisted the public water utility in extending the distribution network.
- ♦ Converted the pipeline's pumping stations from diesel to solar power.
- ♦ Collaborated with local and national governments to reactivate abandoned boreholes and drill new ones around the region.

Our long-term goal, as Guelb Moghrein nears closure, is to hand over all water infrastructure to the Government of Mauritania after working to ensure that local officials have the necessary equipment and expertise to maintain it in the future.

### Zambia

As part of its ongoing commitment to bring fresh clean water to local communities, First Quantum has invested in two commercial boreholes for the Kisasa community, close to Sentinel. The boreholes are connected to a distribution network of 62 communal taps that will supply water to more than 8 000 people of Kisasa.

Furthermore, in 2022 the Company handed over a completed water reticulation facility at Weighbridge clinic in Solwezi District. The facility aims to complement the government's efforts to increase access to clean and safe drinking water in communities in the district.



## Physical resilience

The management of physical risks and climate hazards has always been inherent in how First Quantum manages its operations, from planning to closure.

Below is a summary of prevalent physical risks which have historically occurred in the countries we operate and our experience in managing their impacts.

<p><b>Zambia</b></p>  	<p>Weather events during the annual rainy season in Zambia can damage key infrastructure and contribute to power supply issues. To overcome this risk an additional power line was constructed by the Company which improves the stability and reliability of the power supply. At Kansanshi, there is redundant pumping capacity to manage surge waters as well as investment in the dewatering decline to maintain continuity of pit operations.</p>
<p><b>Spain</b></p>  	<p>Risk of power outages due to lightning strikes is common and therefore electrical facilities have lightning strike covers and safety protections which are periodically checked by personnel and an external auditor. In evaluating the underground project at Las Cruces, a solar power project is being considered to mitigate energy costs.</p>
<p><b>Panama</b></p>  	<p>Cobre Panama's mine planning incorporates the analysis of climate data to ensure that pumping and dewatering capacity is sufficient to cope with the high rainfall of the region. Water management and dewatering plans are reviewed on a regular basis and subject to detailed review from industry experts in geotechnical and hydrogeology.</p>
<p><b>Australia</b></p>  	<p>Flooding and storms have posed a risk to infrastructure and supply chains due to the rural locale of our Australian operations. High risk infrastructure susceptible to storms have been identified on-site and upgraded to increase their resilience and additional routes have been created to mitigate the impact of any supply chain interruption. A wind farm project, subject to final approval, is being considered to mitigate diesel use and associated costs.</p>
<p><b>Mauritania</b></p>  	<p>Due to Guelb Moghrein being located in a dry environment fresh water consumption is an environmental concern. In an effort to reduce their reliance on freshwater resources, Guelb Moghrein has been very successful at replacing fresh with saline water for operational requirements, thus reducing the impact on regional fresh water aquifers.</p>
<p><b>Turkey</b></p>  	<p>Çayeli has studied the link between rainfall, humidity and mine control for their region of operation. This has led to the installation of inclinometers, early warning systems and instant displacement laser monitoring to aid in landslide management.</p>
<p><b>Finland</b></p>  	<p>The pumping capacity at Pyhäsalmi has increased from 2020 and 2021 to accommodate increasing heavy rainfall. The most critical pumping station has elevated its capacity to accommodate surface waters, mine dewatering water and most of the seepage waters from the Tailings Storage Facility (TSF), which are collected to that same pumping station and returned to the TSF for treatment.</p>

**PHYSICAL RISK KEYS**

-  Temperature averages and extremes
-  Water Stress and Drought
-  Flooding
-  Storms and wind
-  Wildfires
-  Landslides

**ACUTE** (Red circle)  
**CHRONIC** (Yellow circle)



# RISK MANAGEMENT

Our primary assessment of the impacts of climate change on our operations and the Company have been informed by scenario analysis based on IEA World Energy Outlook 2022 and climate data projections from the Intergovernmental Panel on Climate Change (IPCC), as recommended by TCFD. Climate risks are incorporated into the Company's bi-annual risk assessment process to aid in strategic planning.

## Climate risk management process

First Quantum's operations and future developments span four continents and a diverse range of conditions. The potential impacts of climate change therefore vary across our business and are specific to the geographies in which we operate. Our assessment of the significance of potential climate change impacts in 2021 was undertaken with the support of specialist climate consultants and engagement with operational site teams.

For the compilation of this report a similar process was undertaken, expanding on the outcomes and analysis of the prior assessment. Risks were identified through the internal consultation of operational and group management teams. Identified risks were evaluated across three climate scenarios. The evaluation, update and monitoring of climate change risks are integrated into the Company's bi-annual risk assessment process. As part of this process, responsibilities for risk controls and management are assigned to operational and group management and are subject to internal audit review. The risk register and the accompanying mitigating controls are reviewed twice a year by the Company's Audit Committee.

### Consultation of climate risks are undertaken with:



Management of our operating assets



EHS&CSR Committee



Senior group and operational management



Executive management

### AREAS CONSIDERED IN CLIMATE RISK ASSESSMENT:



Operational activity



Availability of appropriate technology



Supply chain



Legal and regulatory



Access to capital



Requirements of commodity markets



## Scenario analysis

A core element in assessing the impacts of climate change on our business, is considering assumptions and limitations related to the transition to a low carbon economy and the inherent impact of this transition on climate change.

First Quantum uses this climate-related scenario analysis to enhance its understanding of possible physical and transition risks and opportunities that may arise and how these assumed impacts can influence our business over time. Expanding on the previous scenario

analysis, climate risks and opportunities were evaluated across three different scenarios. Each scenario was developed by incorporating the IEA scenario assumptions coupled with complementary climate data projections from the Intergovernmental Panel on Climate Change (IPCC). The time horizons considered in the scenario analysis were 2025 (Short Term), 2030 (Medium Term) and 2040 (Long Term), as these are aligned with our published 2025 and 2030 GHG targets.

The scenarios used during the 2022 climate risk analysis are as follows:

OVERVIEW	IEA SCENARIO	IPCC DATASET
<b>Current</b>	<p><b>Stated Policies Scenario (STEPS)</b></p> <p>Representative of current policy settings. This scenario excludes Nationally Determined Contributions (NDCs) and longer term net zero targets. Energy-related objectives which include existing policies and measures under development per a sector are included.</p>	<p>RCP 8.5</p>
<b>Moderate Transition</b>	<p><b>Sustainable Development Scenarios (SDS)</b></p> <p>Representing our comparative scenario, this is aligned to a pathway consistent with the goals of the 2015 Paris agreement to limit global warming to 2C°, preferably 1.5C°, from pre-industrial temperatures.</p>	<p>RCP 4.5</p>
<b>Accelerated Transition</b>	<p><b>Net Zero (NZE)</b></p> <p>Pathway for the global energy sector to achieve net zero CO<sub>2</sub> emissions by 2050. Relies on emissions reductions from energy sector to achieve its goals.</p>	<p>RCP 2.6</p>



## Physical risk analysis

The most significant physical climate risks to First Quantum are summarised in the following tables and reflect the risk after considering the controls that we have implemented to mitigate the underlying risk.

Our risk assessment framework is based on an assessment of the likelihood and impact within the following time-frames under each climate scenario assessed:

- ♦ Short-term time frame to 2025
- ♦ Medium-term time frame to 2030
- ♦ Long-term time frame to 2040

Physical and transition risks are rated on a 1 – 5 rating scale of potential impact and likelihood. 1 represents a low risk and 5 a high risk.

**PHYSICAL RISK KEYS**

<ul style="list-style-type: none"> <li> Temperature averages and extremes</li> <li> Water Stress and Drought</li> <li> Flooding</li> <li> Coastal and Offshore</li> </ul>	<ul style="list-style-type: none"> <li> Storms and wind</li> <li> Wildfires</li> <li> Landslides</li> </ul>
<span style="color: red; font-weight: bold;">● ACUTE</span> <span style="color: yellow; font-weight: bold;">● CHRONIC</span>	

RISK	DESCRIPTION	MITIGATING MANAGEMENT STRATEGY
<p><b>Tailings storage facilities and dams</b></p>	<p>The potential failure of a tailings storage facility or dam may be impacted by increased rainfall or variability in chronic rain and temperature. Changes in the intensity or frequency of extreme weather events can impact the operation of the facilities, requiring additional planning and infrastructure to manage the impacts.</p>	<ul style="list-style-type: none"> <li>♦ Regular scenario modelling in the design and operation of facilities using climate data and forecasts.</li> <li>♦ Planning through design and management for extreme weather events to ensure resilience and capacity exists.</li> <li>♦ Continuous monitoring by site and corporate teams.</li> <li>♦ Frequent independent review and audit.</li> <li>♦ Monitoring and review of best practices to ensure ongoing optimum performance.</li> </ul>
<p><b>Mining activities</b></p>	<p>The nature of our mining is subject to climate risk through excessive prolonged rainfall or surge events. These can cause flooding in and around the mining area and processing infrastructure which could limit the ability of operations to operate at normal levels. In addition the variability of rain intensity and volumes can also lead to increased maintenance requirements.</p>	<ul style="list-style-type: none"> <li>♦ Design, engineering and construction of plant and machinery reflects the changing environments in which they operate.</li> <li>♦ Weather data is monitored and extreme weather response plans are conducted by site management to ensure these are incorporated into mine planning.</li> <li>♦ Mitigating actions, such as ensuring that capacity exists for coping with surge weather events or monitoring mechanisms and protocols to reduce the vulnerability of our workforce or infrastructure to extreme weather events, have been and continue to be implemented and reviewed by site management.</li> </ul>



RISK	DESCRIPTION	MITIGATING MANAGEMENT STRATEGY
<p><b>Supply chain</b></p>  	<p>Extreme weather events such as storms could result in interruptions or delays to the supply chain at ports and roads that are necessary for the provision of key inputs required for mine production.</p>	<ul style="list-style-type: none"> <li>Inventory of key supplies is actively managed in conjunction with a review of forecast weather data to maintain the resilience of operations to supply infrastructure interruptions.</li> <li>The Company engages with our host governments on the management of local infrastructure that supports the communities and the mines as well as contributing to the maintenance and upgrade of related infrastructure where appropriate.</li> </ul>
<p><b>Power supply</b></p>  	<p>Zambia has a high degree of dependency on hydroelectricity where changes in levels of rainfall could affect the power supply in the country.</p> <p>Other operations can also experience power supply outages as a result of storm events. For example In Panama, the power line connecting the power station to the mine, runs through an inaccessible area characterised by undulating topography, which could be affected by extreme weather events.</p>	<ul style="list-style-type: none"> <li>Powerline infrastructure was designed and constructed for the environment in which it is located. It is subject to regular review and maintenance by the Company's teams.</li> <li>The Company is engaged with local and national governments in our host countries, particularly in Zambia, on the power supply to our mines.</li> <li>The Company is working in partnership with Total Eren and Chariot Energy on the establishment of alternative and renewable sources of power in Zambia.</li> </ul>
<p><b>Communities</b></p>  	<p>Our host communities, particularly in emerging economies, where livelihoods are more dependent on agriculture, may be more adversely impacted by changes in weather patterns, such as rainfall or temperature on local resources. As a key contributor to the local and national economic development, there may be increased expectations of us by our communities.</p>	<ul style="list-style-type: none"> <li>The Company maintains strong links with our host communities, through regular formal and informal engagement to ensure that any concerns are communicated and addressed in a timely fashion.</li> <li>A number of initiatives are undertaken by the Company, to assist in the availability of key resources such as water and access to education and training. Through these programmes we seek to decrease the likelihood of shortages and/or interruptions impacting our host communities.</li> </ul>
<p><b>Health and safety</b></p>  	<p>Primary impact of climate risks also pose a direct risk to staff. The magnitude and impact of health and safety hazards can be temporarily increased due to climate hazards, for example, increased temperatures can lead to heat exhaustion.</p>	<ul style="list-style-type: none"> <li>Implementation of health and safety procedures designed to minimise the impact of extreme weather events and the vulnerability of the workforce and key equipment.</li> <li>Where climate hazards are more severe working conditions are monitored by the onsite teams. Programmes are in place to educate the workforce on well-being, such as the need for hydration and fatigue breaks.</li> </ul>



RISK	DESCRIPTION	MITIGATING MANAGEMENT STRATEGY
<p><b>Water management</b></p>  	<p>Surge events and variable levels of rainfall can pose operational challenges to the management of water at operations. Whilst water stress and drought events can decrease the availability of water used in processing.</p>	<ul style="list-style-type: none"> <li>Water management is an area subject to continuous monitoring and capacity constraints are considered in the design and planning process.</li> <li>Efforts to reduce the usage of freshwater are made at operations by either adopting new technologies or continually improving efficiencies through the promotion of water reuse.</li> </ul>
<p><b>Infrastructure damage</b></p>  	<p>Acute weather events pose a risk as the increased intensity and severity of storms, floods or wildfires has the potential to reduce the structural integrity of buildings and the potential to damage equipment. Damage to equipment would cause disruptions therefore presenting an operational challenge. Whilst the collapse of buildings or infrastructure represents a potential health and safety risk to employees.</p>	<ul style="list-style-type: none"> <li>Our operations have experience managing acute weather events, by monitoring the climatic conditions in which we operate contingency plans are developed to limit disruptions to work</li> <li>Infrastructure on site is subject to reviews to identify if maintenance is required or if actions to increase resilience should be considered.</li> <li>Evacuation plans and early warning systems have been implemented to ensure the evacuation of staff and equipment in response to events.</li> </ul>



## Transition risks analysis

Similar to the physical risk analysis, transition risks are assessed across each of the scenarios. Whilst physical risk is assessed by operations, transition risk is assessed at a company wide level. The most significant transitional risks to First Quantum are summarised in the following table:

**TRANSITION RISK KEY**



Policy and Legal Risks



Market Risk



Technology Risk



Reputation Risk

RISK	DESCRIPTION	MITIGATING MANAGEMENT STRATEGY
<p><b>GHG emissions pricing and reporting requirements</b></p> 	<p>As global commitments to decarbonisation increase, governments and regulatory bodies will impose stricter laws and regulations linked to GHG emissions. Carbon pricing as a control mechanism and reporting requirements will become more stringent as national commitments toward a lower carbon economy develop.</p>	<ul style="list-style-type: none"> <li>◆ The Company has regular engagement with local, regional and national government authorities and agencies to ensure that we have visibility and understanding of enacted changes to regulatory and policy frameworks.</li> <li>◆ Carbon pricing has been embedded in the evaluation of new projects to assess their resilience to potential new carbon taxes and to encourage the use of lower carbon technologies.</li> <li>◆ The Company has set interim and longer-term decarbonisation targets which are expected to significantly reduce the carbon footprint of metal production and exposure.</li> </ul>
<p><b>Shifts in energy policies</b></p> 	<p>Shifts in energy policies could potentially impact the market price of electricity in the countries in which we operate. This may be particularly relevant for energy generated from non-renewable sources, whilst the increased demand for energy from renewable sources will impact supply.</p>	<ul style="list-style-type: none"> <li>◆ The Company monitors market prices for electricity and seeks long-term contracts for offtake, as well as opportunities for self-supply, where reasonable and competitive.</li> <li>◆ Operations at the Company's major sites are focused on mining and processing energy efficiency projects that have a significant positive impact on its emissions profile thereby reducing exposure.</li> </ul>
<p><b>Costs to transition to new technology</b></p> 	<p>Reducing emissions related to mining fleets and the transition to renewable power sources are vital to the mining industry to decarbonise. This transition may require significant capital investment to implement, whilst additional costs could be required for training and maintenance.</p>	<ul style="list-style-type: none"> <li>◆ The Company has committed to reducing its reliance on high-carbon fuels for power generation, in the pathway to achievement of GHG emissions reduction targets, as outlined in this report.</li> <li>◆ The Company is leading the industry in the use of trolley-assist which significantly reduces fuel consumption, as well as a broader focus on the electrification of pit machinery, which remains key to the Company's short and medium-term decarbonisation strategy.</li> </ul>



RISK	DESCRIPTION	MITIGATING MANAGEMENT STRATEGY
<p><b>Risk of success of new technologies</b></p> 	<p>Newer technology poses a risk of failure during or post-implementation. This can lead to downtime, leading to increased costs and reducing the expected efficiencies. Even with proven implementation and successful use, low-carbon technologies will require a well-established supply chain to meet the demand which can take several years to establish.</p>	<ul style="list-style-type: none"> <li>• The Company is engaged with the original equipment manufacturers (OEM) to monitor the availability and commercial viability of new mine fleet technology in line with the Company's renewal program.</li> <li>• Trolley assist also offers potential future bridging technology for the implementation of commercially viable battery solutions to diesel-operated mine fleets.</li> </ul>
<p><b>Changing customer behaviour</b></p> 	<p>This shift in consumer preferences is a risk for carbon-intensive products. In the future, commodity market pricing mechanisms could assign a premium to products with lower embedded GHG emissions.</p>	<ul style="list-style-type: none"> <li>• The GHG intensity of copper produced from the Company's operations in Zambia are lower than or comparable to that of the average global copper production. Further initiatives to reduce energy consumption, maximise productivity and further decarbonise power are also expected to yield an improved GHG intensity of production.</li> <li>• Actions to reduce our GHG emissions in Panama, centred on the coal-fired power station, will significantly reduce the GHG intensity of the operation.</li> </ul>
<p><b>The increased cost of input materials</b></p> 	<p>Second order impacts can arise from changes in the energy mix, for example, the reduction in petroleum production may affect prices for key inputs to the business such as fuel, sulphur and ammonium nitrate.</p>	<ul style="list-style-type: none"> <li>• Price monitoring and offtake agreements for key inputs are key areas of focus for the operations' commercial teams.</li> </ul>
<p><b>Sector stigmatisation/ pressure to decarbonise resulting in a reduction in capital availability</b></p> 	<p>The continued use of coal for the power provided in Panama could hinder the ability of the Company to take advantage of strategic opportunities or limit access to capital markets, as stakeholder expectations for decarbonisation increase</p>	<ul style="list-style-type: none"> <li>• The Company has reported key climate-related metrics for a number of years and is committed to the transparency and ongoing development of our climate change and broader ESG reporting.</li> <li>• There is continuous engagement with key stakeholders and ratings agencies on our approach and actions relating to climate change to ensure that our strategy is communicated and understood.</li> <li>• A clear action plan for decarbonising power in Panama is being implemented with the proportion of coal power to operations expected to reduce by around one fifth from 2024 as renewable power is sourced for the expansion of operations.</li> </ul>



# OPPORTUNITIES FOR COPPER

## Climate-related opportunities for First Quantum

### MARKET



#### Demand for our metals

The transition of the global energy system from one that is fuel-intensive to one that is minerals intensive is expected to drive a substantial expansion in growth for the Company's core metals, copper and nickel. First Quantum, as the 6th largest global producer of copper, and with the Enterprise project in Zambia, soon a major nickel producer, is well placed to take advantage of this. Our growth pipeline includes a strong portfolio of greenfield and brownfield projects with a pathway to 1 million tonnes of annual copper equivalent production.

### PRODUCTS & SERVICES



#### Lower intensity production

As we seek to deliver on our GHG targets, we expect to lower the GHG intensity of the metals produced by our mines. Premiums for produced metals with lower GHG intensity are not currently widely seen in commodity markets. Lowering the GHG intensity of our copper and nickel, combined with our sustainable and responsible approach to mining, will position our production well to take advantage of opportunities in this area.

### ENERGY SOURCE



#### Mining and power decarbonisation

An increased use of renewable sources of power and electric vehicles will require significantly increased volumes of transition minerals, such as copper and nickel, for the infrastructure as well as for the expansion and reinforcement of electricity grids.

As the global energy system transitions, First Quantum has the opportunity to further increase the proportion of our energy that is renewable, driving environmental, operational and economic benefits over the medium and long term. In Zambia, 85% of grid electricity is renewable, and in Panama, the Company will use renewable power for the CP100 expansion.

### RESOURCE EFFICIENCY & RESILIENCE



#### Innovation driving sustainability

A strategic opportunity for the Company is our focus on pit electrification which will be key to the decarbonisation of mining activities.

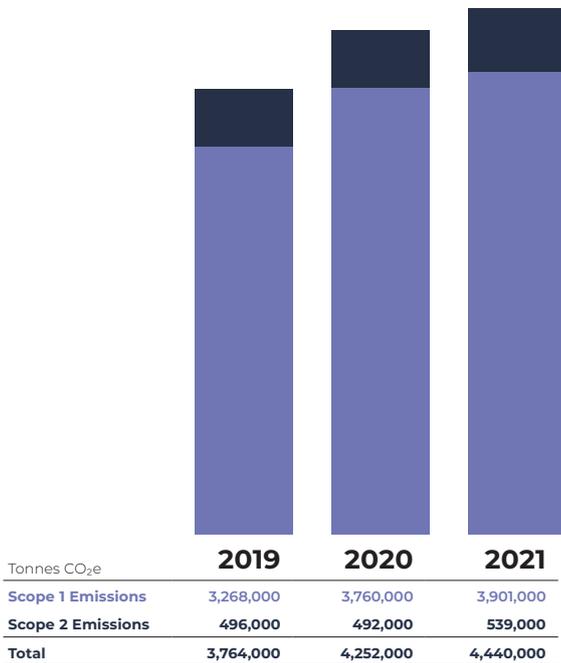
First Quantum has pioneered the implementation of technologies such as trolley-assist which significantly reduces diesel consumption.

Expansion of the use of innovations such as trolley assist will drive resilience to climate change transition risks through increased efficiency of energy use and position First Quantum to further capitalise on technological developments as they become commercially available.



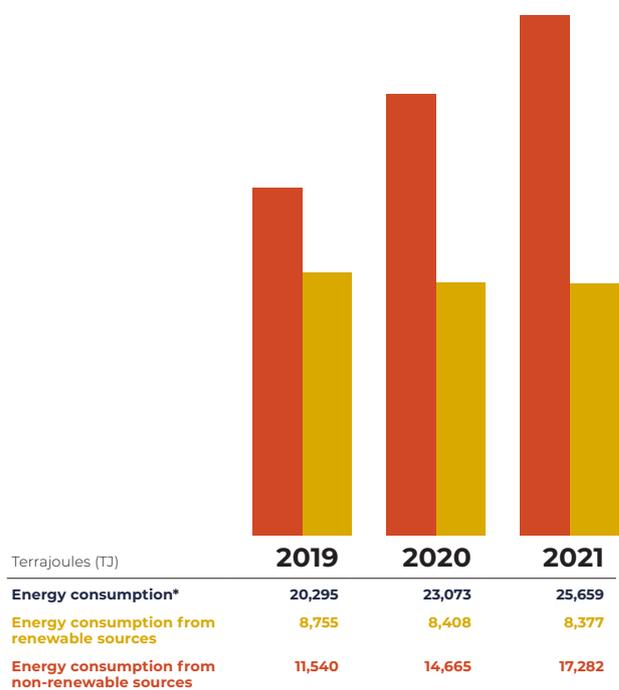
# GHG, ENERGY AND WATER REUSE METRICS: 2019 TO 2021

## FIRST QUANTUM SCOPE 1 & 2 CO<sub>2</sub>e EMISSIONS



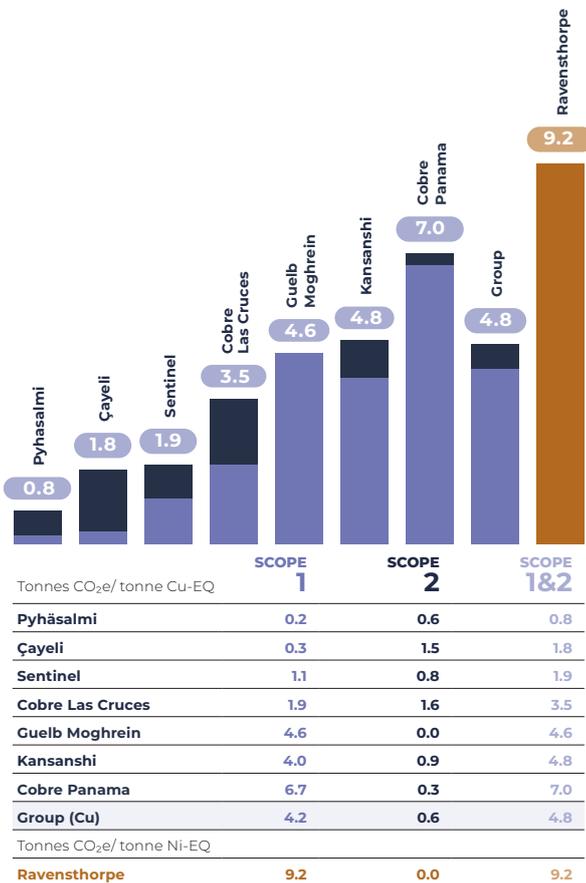
Increased GHG emissions in 2021 were principally due to increased coal and diesel consumption at Cobre Panama as production levels were at full capacity for the year following reduced operations in 2020 due to health and sanitary protocols imposed in response to COVID-19.

## FIRST QUANTUM ENERGY CONSUMPTION

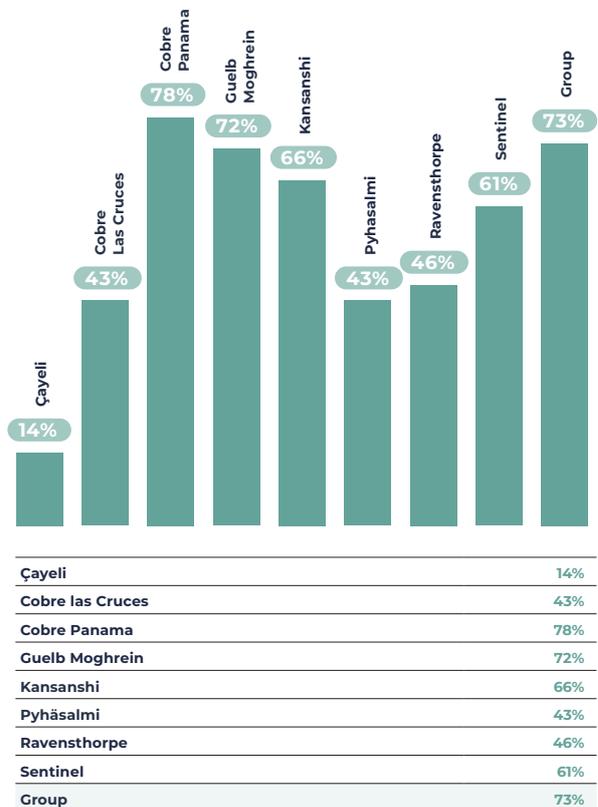


\* Includes energy consumed from all sources by the Company's operations (purchased electricity and on-site generation)

## 2021 FIRST QUANTUM GHG INTENSITY



## 2021 FIRST QUANTUM WATER REUSE



## Cautionary statement on forward-looking information

Certain statements and information herein, including all statements that are not historical facts, contain forward-looking statements and forward-looking information within the meaning of applicable securities laws. Such forward-looking information includes estimates, forecasts and statements as to the Company's plans, targets and commitments regarding greenhouse gas emissions as well as its approach to climate change-related physical and transition risks and opportunities (including intended actions to address such risks and opportunities) such as: the expected growth in levels of demand for copper and nickel and the impact thereof on the Company's business and prospects; targeted levels of reduction in absolute greenhouse gas emissions and carbon intensity for copper mined; investments in improving the climate resilience of the Company's operations; the decarbonizing of power used in the Company's operations; the incorporation of carbon pricing in the evaluation of new projects (including identification of feasible sources of renewable power); the Company's 2030 target emissions and targeted Scope 1 and Scope 2 emissions (including overall emissions and percentages attributable to coal, natural gas, fuel, electricity and other activities or inputs); anticipated capital expenditures to decarbonize power sources and otherwise deliver climate change benefits; the use of trolley assist technology to improve operational and energy efficiency; the potential pumped water energy storage project at the Company's closed Pyhäsalmi underground mine; the goal of handing over water infrastructure at Guelb Moghrein to the Government of Mauritania and building local capacity to manage and maintain such infrastructure; the aims of discussions between the Company and the Government of Panama regarding disaster risk management; the physical risks of climate change including on tailings storage facilities and dams, mining activities, the Company's supply chain, power supply at its projects, host communities and their expectations of the Company, health and safety of the Company's staff, water management and infrastructure at the Company's projects; and the transition risks associated with climate change, including greenhouse gas emissions pricing and reporting requirements, shifts in energy policies, the costs of transitioning to new technologies, risk of failure of newly-adopted technologies, changing customer behaviour, increases in the cost of inputs and the possible reduction in availability of capital as a result of sector stigmatization and/or pressure to decarbonize.

Often, but not always, forward-looking statements or information can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate" "believes", "targets" or "intends" or variations of such words and phrases or statements that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved.

With respect to forward-looking statements and information contained herein, the Company has made numerous assumptions including among other things, assumptions about continuing production at all operating facilities, the price of copper, gold, nickel, silver, iron, cobalt, pyrite, zinc and sulphuric acid, anticipated costs and expenditures, the success of Company's actions and plans to reduce greenhouse gas emissions and carbon intensity of its operations and the ability to achieve the Company's goals, the scale and pace of decarbonization and certain climate data projections. Forward-looking statements and information by their nature are based on assumptions and involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. These factors include, but are not limited to, future production volumes and costs, the temporary or permanent closure of uneconomic operations, costs for inputs such as oil, power and sulphur, political stability in Panama, Zambia, Peru, Mauritania, Finland, Spain, Turkey, Argentina and Australia, adverse weather conditions in Panama, Zambia, Finland, Spain, Turkey, Mauritania, and Australia, labour disruptions, potential social and environmental challenges (including the impact of climate change), power supply, mechanical failures, water supply, procurement and delivery of parts and supplies to the operations, the production of off-spec material and events generally impacting global economic, political and social stability.

See the Company's Annual Information Form for additional information on risks, uncertainties and other factors relating to the forward-looking statements and information. Although the Company has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in the forward-looking statements or information, there may be other factors that cause actual results, performances, achievements or events not as anticipated, estimated or intended. Also, many of these factors are beyond First Quantum's control. Accordingly, readers should not place undue reliance on forward-looking statements or information. The Company undertakes no obligation to reissue or update forward-looking statements or information as a result of new information or events after the date hereof except as may be required by law.

All forward-looking statements made and information contained herein are qualified by this cautionary statement.



[www.first-quantum.com](http://www.first-quantum.com)



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