紫金矿业
ZIJIN MINING

Climate Change Action Plan

Zijin Mining Group Co., Ltd
April 2023

CONTENTS

ABOUT THIS REPORT

Report Period

This report provides an overview of Zijin Mining's performance in fulfilling its responsibilities for energy saving and emission reduction, climate change risk assessment, and sustainable development in 2022. Unless stated otherwise, this report covers the period from January 1, 2022 to December 31, 2022.

Report Scope

Unless otherwise stated, the data and information in this report cover Zijin Mining Group Co., Ltd. and its wholly-owned and controlled subsidiaries, as set out in the body of this report.

Information Notes

The information in this report is derived from information circulars, official documents and statistical reports issued by Zijin Mining Group Co., Ltd., as well as summary statistics on the actual business and situation of its wholly-owned and controlled subsidiaries. This report also takes into account the Company's development priorities, climate change related guidelines, standards and initiatives, stakeholders' concerns, etc.

Reference Standards

This report has been prepared in accordance with the following guideline standard initiatives:

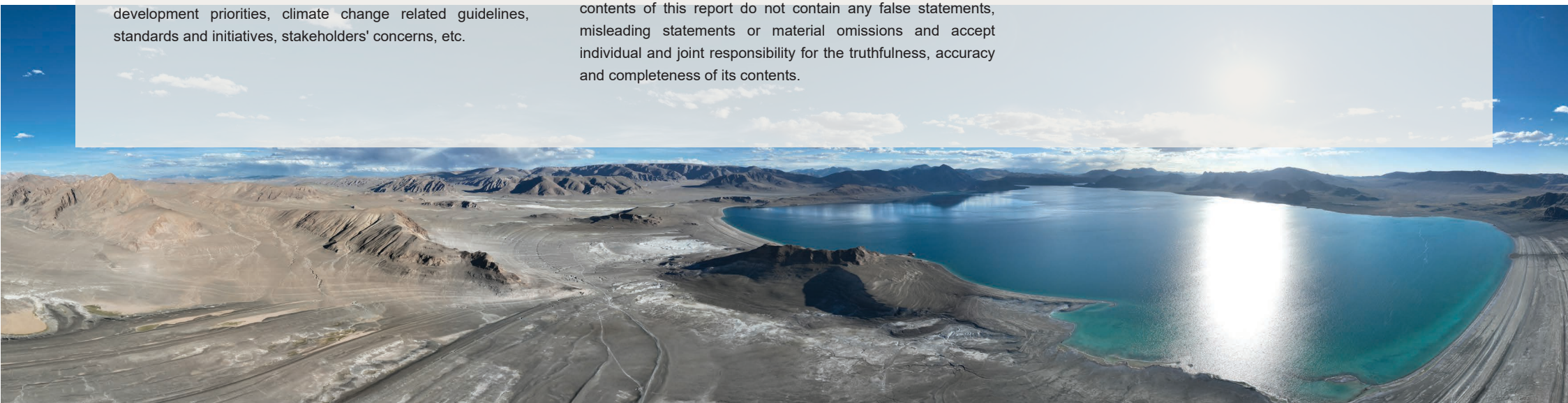
- Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
- ICMM Climate Change Position Statement
- Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard
- Appendix 27 Environmental, Social and Governance Reporting Guide issued by the Hong Kong Stock Exchange (HKEX)

Board Statements

This report was approved by the Board of Directors of Zijin Mining Group Co., Ltd. on January 30th, 2023. The Board of Directors and all Directors of the Company guarantee that the contents of this report do not contain any false statements, misleading statements or material omissions and accept individual and joint responsibility for the truthfulness, accuracy and completeness of its contents.

Forward-looking Statements

Except for historical facts, all statements in this report regarding events that are likely to occur or will occur in the future, as well as statements regarding events, including but not limited to assumptions, prerequisites, greenhouse gas (GHG) emission targets, climate change risk assessment levels, financial estimates of energy efficiency, emission reduction and measures to address climate change risks, action plans, etc., are forward-looking statements. The actual future results or trends of the events referred to in this report may differ from those projected in this report, considering the effects of external variables. The forward-looking statements in this report were made prior to January 30th, 2023 and Zijin Mining Group Co., Ltd. undertakes no obligation or responsibility to make any changes to these forward-looking statements.



A LETTER FROM THE BOARD OF DIRECTORS

CHEN Jinghe
Chairman and Chief Officer of the Strategic and Sustainable Development (ESG) Committee

Zijin's approach to addressing climate change

Reducing greenhouse gas emissions and limiting the effects of climate change is a global imperative. To achieve the objectives and principles of the United Nations (UN) Framework Convention on Climate Change and the Paris Agreement, joint efforts from businesses, government and society are needed. Moving to a low-carbon future together requires adopting new energy sources in lieu of fossil fuels and exploring the establishment of an innovative global climate governance framework.

With the urgency of addressing the climate change crisis, the 27th United Nations Climate Change Conference reaffirmed key concerns such as Nationally Determined Contributions (NDCs), Net Zero emissions targets, 1.5°C pathway and energy-efficient and emission reduction technologies. As the world's second largest economy, China has pledged to carbon peaking by 2030 and achieve carbon neutrality by 2060. China has been ranked among the countries with the fastest reduction in energy consumption intensity globally. With the national carbon trading market launched in 2021, China has become the world's largest carbon market and clean power generation body. China's adherence to a green and low-carbon transition approach is becoming an important force in jointly building a community for both humankind and nature[1].

Zijin Vision: Adhering to green and low-carbon sustainable development

As a significant participant in the global mining market, Zijin Mining adhere to “Mining for a better society” and makes sustainability core in Zijin’s business strategy. We will accelerate the strategic layout of new energy related minerals, deploy innovative energy-saving and emission-reduction technologies in all aspects, and utilize carbon capture, utilisation, and storage (CCUS) technology to transition into a low-carbon sustainable future. Zijin Mining has released the Three-Year (2023-2025) Plan and 2030 Development Goals, positioning our company's overall strategic goal as "a green, high-tech, leading global mining company". Our Company will strive to achieve national targets ahead of schedule, aiming to peak carbon emissions by 2029 and achieve carbon neutrality by 2050, thus contributing to keeping the global temperature rise well below 2°C by the end of the century compared to pre-industrial levels.

Commit to a green, low-carbon sustainable development pathway and promote low-carbon transformation across the entire industry value chain.

As a material providers for industry and the energy sector, mining is being recognised as a fundamental part of the economy. The convergent wave of new energy and materials, as well as electrification is sweeping the world like never before. Zijin Mining provides high-quality and low-carbon metals, minerals and raw materials in keeping with the commitment to green and low-carbon sustainable development. Zijin Mining supports carbon neutrality by focusing on achieving harmony between ecological protection and mineral resource development.

In pursuit of a better life for humanity, Zijin Mining aims to achieve carbon peak by 2029 and carbon neutrality by 2050.

"High-energy efficiency, low-carbon, green intelligent" is our action guideline to address climate change. Numerous efforts will be enhanced to deploy climate change initiatives in our projects across the globe. We will optimise our own operations and upstream and downstream operations in the value chain through low- and zero- carbon concepts and energy-saving process improvements, as well as facilitate the transition from fossil fuel to clean energy. We will continuously develop green power projects such as hydropower, wind power and photovoltaic power generation, while investing in ecological reforestation, hydrogen and carbon capture, utilisation and storage (CCUS) technology research. Furthermore, we will expand low-carbon initiatives into fields including procurement, logistics and finance, and strengthen partnerships with low carbon companies and giving them preference to low carbon partners.

Respond to the Paris Agreement initiative and make adequate disclosure of climate-related financial information.

As a member of the World Gold Council, Zijin Mining follows the Responsible Gold Mining Principles. The Company has also actively responded to the Paris Agreement, and has made commitments to disclose its position and progress on climate change related risks and opportunities as recommended by the Task Force on Climate-Related Financial Disclosures (TCFD).

Demonstrate industry-leading corporate social responsibility and contribute to the global 2°C goal.

Zijin Mining is primarily engaged in copper, lithium and other strategic key mineral products and their derivatives. Copper is a crucial metal for electrification and lithium is known as "white oil", both of which are vital weapons for the transition to green energy. According to the forecast of the International Energy Agency (IEA), the demand for related metal products in the downstream market will continue to rise as more industries accelerate towards the green energy transition worldwide. As a responsible and aspirational global mining enterprise, Zijin Mining will empower the downstream market towards a low-carbon future while achieving our own transition.

In this report, Zijin Mining has disclosed our governance and climate-related risks and opportunities, as well as a comprehensive review of the existing and potential impact of these risks and opportunities on our business strategy and financial plans.

This report, as a starting point, will propel Zijin Mining forwards along the path of sustainable development.

1 President Xijinping's written speech entitled “Staying Committed to and Jointly Promoting Development to Bring Asia-Pacific Cooperation to New Heights” at the APEC CEO Summit on 17 November 2022

REPORT HIGHLIGHTS

Our Objectives

- By **2029**, reach Carbon Peak
- By **2050**, strive to achieve Carbon Neutrality
- By **2030** achieve **30%** of our energy mix from Renewable Energy Sources
- Commitment to a gradual reduction of the GHG emissions intensity (with a base year of 2020)
  - By **2025**, reduce GHG emissions per unit of industrial value added by ↓**20%**
  - By **2029**, reduce GHG emissions per unit of industrial value added by ↓**38%**

Strategic Deployment

Embracing Planetary Change	Revitalising Industrial Processes	Maintaining Continual Improvement
A low-carbon future for humanity below 2°C	**Cleaner production to benefit wider society**	**Sustainable development through low carbon footprint**
We will involve the entire industry chain from key minerals upstream to new materials downstream, providing the world with high-quality new energy metals and materials to help the global low-carbon transformation.	Together with our partners, we will embrace the opportunities of green finance development, strengthen technological cooperation and breakthroughs, and drive the transition of the whole value chain into a low-carbon economy.	We will improve accountability and transparency of our management to confront with climate change, implement competitive energy and carbon reduction measures and reduce the carbon footprint of our products.

Transition Path

Short-term	Medium-term	Long-term
2023~2029	2030~2045	2046~2050
While growing our business, we will implement emission reduction measures to achieve carbon peaking, e.g., clean fuel substitution, increasing electrification ratio, and clean energy substitution.	Through technique improvement, energy management, clean energy and other measures in parallel, to achieve accelerated GHG emissions reduction below the global 2°C path scenario.	In the context of the widespread implementation of clean energy, the application of carbon capture technology will be improved, and carbon neutrality will be achieved through measures such as natural carbon sinks and carbon trading.

ABOUT ZIJIN

Zijin Mining Group Co., Ltd. (HKEX: 2899, SSE: 601899, referred to as Zijin Mining) is a large-scale multinational mining group engaged in the exploration and development of copper, gold, zinc, lithium, and other metal mineral resources, as well as engineering design and technology application research worldwide, with important mining investment projects in 17 provinces (regions) in China and 14 countries overseas. It is a major global producer of copper, gold, zinc and other minerals.

Focusing on the green mineral raw material sector, the Company has developed into the fastest growing and most proliferating large mining enterprise in the copper industry in the world. As of now, the Company holds equity metal resources of

Copper 72.38 million tonnes

Gold 2,978 tonnes

Zinc (Lead) 11.08 million tonnes

Silver 14.5 thousand tonnes

of which copper reserves are equivalent to more than half of China's total reserves. Zijin is making a strong foray into the field of new energy and materials. The Company has a "white oil" equivalent lithium carbonate resource of more than 12.7 million tons, ranking among the top 10 major lithium enterprises in the world in terms of resources, with a prospective annual capacity of more than 150,000 tons of lithium carbonate equivalent, laying the foundation for the Company to become an important global producer of lithium.

Table 1 Overview of Zijin Mining's Financial Performance and Production Status

Indicator/year	2020	2021	2022
Operating Revenue (billion CNY)	171.5	225.1	272.1
Net Profit (billion CNY)	6.5	15.7	20
Copper (thousand tonnes)	453	584	860
Gold (tonnes)	40.5	47.5	56
Zinc (thousand tonnes)	342	396	400
Argentum (tonnes)	299	309	388

Note: 2022 is the disclosed number of earnings forecast and has not been audited.

Figure 1 Map of Zijin Mining's Business in China

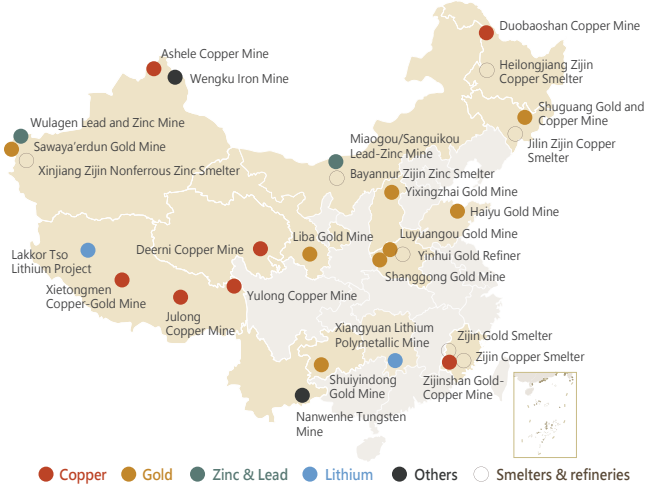


Figure 2 Map of Zijin Mining's Business in the World

ZIJIN'S ROLE IN THE GLOBAL TRANSITION TO A LOW CARBON ECONOMY

We believe that the mining industry plays a vital role in the global achievement of the Paris Agreement 2°C target and sustainable development, as well as the engine of the global transition to a low-carbon economy. As a crucial player in global polymetallic mineral market, Zijin Mining fully recognises the important role we play in addressing climate change and achieving a global low carbon economic transition and is committed to being a key player in addressing the global climate change challenge.

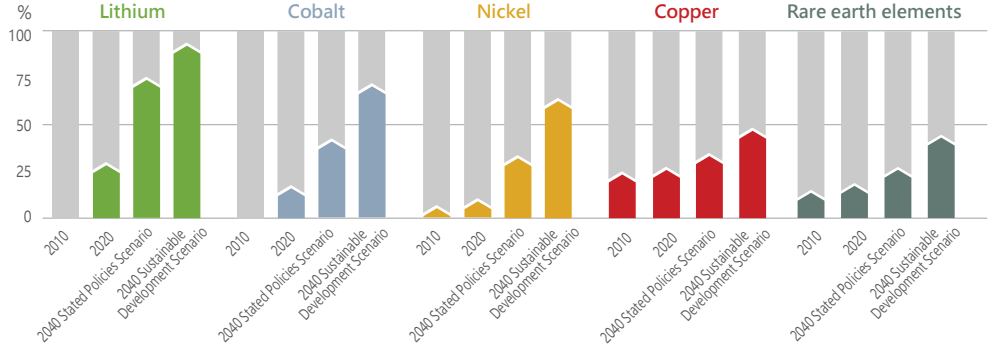
Zijin Mining will continue to acquire new energy and new materials related minerals, including lithium, nickel, cobalt, vanadium and hydrogen related resources, while increasing the production capacity of our advantageous minerals, such as copper and gold. Leveraging upon our efficient development capabilities, we will export the key metals required for clean energy technologies to the world, securing the provision for metal products' supply gap in the short term and contributing to a smooth transition to a low-carbon economy around the world.

Key Metals That Support The 2°C Climate Target

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Coping with climate change has become a global consensus, various countries and regions have announced net zero targets, and the rapid application of clean energy technology has become the key to low-carbon transformation of countries. Clean energy technologies are highly dependent on minerals and metals, and the global supply and demand gap for key metals will further expand in the future, especially the demand for strategic key metals such as copper, lithium, nickel, cobalt and rare earth elements will surge. According to the International Energy Agency (IEA), by 2040, under the Sustainable Development Scenario (SDS), the share of demand for these strategic key metals in clean energy technologies will rise significantly, with copper and rare earth elements accounting for more than 40% of demand, nickel and cobalt for 60-70%, and lithium for nearly 90%.

Figure 3 Share of Clean Energy Technologies in Total Demand for Selected Minerals by Scenario, 2010-2040[2]



Source: IEA. Licence: CC BY 4.0

New Energy Industry Development Drives Market Demand for Mining Products

Copper

Global demand for copper products keeps rising, with global refined copper consumption reaching 24.989 million tonnes in 2020 and 25.26 million tonnes in 2021. According to the International Copper Study Group (ICSG), conventional vehicles use 23kg of copper per vehicle, hybrid electric vehicles 40kg, plug-in hybrids 60kg and pure electric vehicles 83kg. ICSG research indicates that copper supply and demand is expected to rise in 2022, driven by a combination of growth in mining supply and increased copper use in manufacturing.

Lithium

The main demand from downstream is for lithium batteries, in which more than 60% of the demand is used for new energy vehicles and consumer electronics, with new energy vehicle power batteries alone accounting for as much as 35%.

Silver

Traditionally, Silver is used as one of the raw materials of coinage metals and jewellery crafts. It r has gradually shifted to industrial applications due to its scarcity, excellent electrical conductivity, thermal conductivity and reflectivity to visible light, as well as its superior ductility and malleability. Related downstream industries include automotive, consumer electronics, industrial equipment, defence and aerospace industries with large investments, scale and number of end customers. With the rise of the new energy automotive industry, the industrial demand for silver is increasing year by year, with electronics, power, photovoltaics, and silver brazing alloys becoming the main downstream demand sectors for silver.

2 https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary

Driving the Low Carbon Economic Transformation of the Value Chain

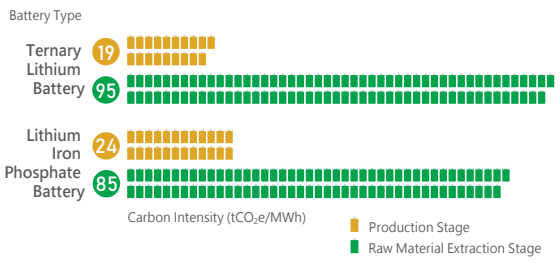
In order to achieve the goals of the Paris Agreement, renewable energy, energy storage, new energy vehicles and other industries undoubtedly play a major role in global transition to a decarbonised economy. The latest BP Energy Outlook 2022 research results showed that, the global installed capacity of photovoltaic and wind power may exceed 20,000 GW by 2050, which is more than 15 times the 2019 level. MarketsandMarkets research states that, the global market size of battery energy storage systems is expected to increase to US$15.1 billion by 2027, with a compound annual growth rate of 27.9% from 2022 to 2027. According to Beyond Market Insights data, by 2030, the global electric vehicle market size will expand to approximately US$1,108.8 billion, with a 22.5% increase of CAGR from 2022 to 2030.[3]

Along with the rapid development of the new energy industry, concerns and questions arise from all sectors of society regarding the carbon footprint along the entire new energy-related value chain. Take the electric vehicle supply chain as an example, research data from various sources indicate that the GHG emissions generated by the production of electric vehicles at the current stage are significantly higher than those of traditional fuel vehicles. According to the results of the life-cycle assessment, the electric vehicles battery manufacturing process accounts for more than 20% of total GHG emissions across all the stages. In addition, nearly 80% of the GHG emissions of new energy vehicle battery carbon footprint comes from raw material extraction.

Raw Material Acquisition for Electric Vehicle Batteries are highly Carbon Intensive

Research shows that the raw material extraction for electric vehicles with lithium iron phosphate batteries accounts for 78% of the carbon emissions of the production's entire phases, while for electrical vehicles with ternary lithium batteries, the carbon emissions exceeds 80% of total GHG emission.

Figure 4 Estimation of Carbon Emission Intensity of Electric Vehicle Traction Batteries



Source: China Automotive Technology & Research Center Co. Ltd data

Zijin Mining will keep increasing investment in decarbonised mining, smelting and other areas. Alongside with the Paris Agreement, Zijin will reduce GHG emissions step by step and lower our carbon footprint emission within raw material extraction process. Meanwhile, Zijin Mining will monitor Scope 3 GHG emissions, develop effective policies and measures to guide related companies in the supply chain reduce emissions, and work together with various partners across the industry and supply chain to transition towards a low carbon economy.

Provide Affordable Clean Energy to Society

The world is going through a period of economic turbulence and volatility. Since 2021, the global economy has continued to recover, driving rapid growth in energy and power demand. However, traditional energy and raw material resources depend on specific natural geographical and climatic conditions, availability factors, and there are structural shortages in energy supply such as uneven distribution across the globe, high costs, short-term surpluses and long-term shortages. If corresponding improvements cannot made simultaneously, the imbalance between energy supply and demand will persist, especially in developing countries and parts of less developed countries, where industrial and residential electricity is still scarce resources.

Clean energy, due to its less-reliance on geological conditions compared to natural geographical conditions, may disrupt the oligopoly structure of traditional energy sources caused by geographical factors. The strategic significance of clean energy as a solution to the global power gap issue will become increasingly prominent.

With net-zero emissions and energy transition becoming a global consensus, accelerating the development of renewable energy supply systems has become a common global endeavour. We clearly recognise that clean energy will bring about tremendous changes worldwide, not only helping achieve the Paris Agreement goals but also providing more affordable clean energy to remote areas, regions, countries, industries, and residents in those areas with insufficient electricity.

As a major global mining developer, Zijin Mining's assets are located in a number of developing countries around the world, close to communities with power shortages and an urgent need for clean energy. We hope to promote our own energy transformation, waste heat recovery and other low-carbon transformation process, while exporting more efficient and affordable clean energy to local communities and residents. For example, by helping some communities around mining areas to build clean energy power supply projects like photovoltaics and hydropower station, and exporting surplus energy generated through combined heat and power generation and surplus heat recovery to the communities. As such, we can all enjoy the benefits of clean energy in our lives.

3 https://www.marketsandmarkets.com/PressReleases/battery-energy-storage-system.asp

Delivering the Benefits of a Low-carbon Economy for Mineral-dependent Residents

According to the UN, 10% of the world's population that is 700 million people, live in extreme poverty with daily living expenses of less than $1.90. Although global poverty rates has declined by more than half since 2000, the Coronavirus pandemic in 2019 could add 500 million more people, that is 8% of the total global population, to the global poverty headcount. In addition, the International Labour Organization (ILO) has estimated that as many as 80-100 million people worldwide depend on small-scale mining proceeds for their livelihoods, with the majority of small-scale miners living in poverty as the value of a single transaction of gold is equivalent to only about US$1. Mortality rate in small-scale mining are about 90 times higher than in the mining industries of industrialized countries.

As a result, society is demanding more responsibility from the mining industry. The livelihoods and well-being of people living in mining areas are important issues in global Sustainable Development Goals (SDGs), and the transition to a global low-carbon economy cannot at the expense of exploiting and sacrificing local communities. The harmonious development of the mining industry and the well-being of the population is also one of the key issues of concern for international mining organizations.

"Mining for a Better Society" is Zijin Mining's purpose.

We have a natural responsibility to help lift our communities out of poverty and enable them to share in the fruits of mining development. This includes not only paying taxes and community donations alongside with mining development, but we also aspire to help local communities upgrade their industries and gradually reduce dependency on mining, toward to a better living conditions and social well-being.

Zijin employees will actively follow international initiatives and commit to international best practices in mining exploitation. Through stakeholder participation mechanisms, local employment, and procurement, as well as funding to assist in infrastructure development and public welfare services in mining areas, we will help local residents overcome employment barriers, improve the livelihood of local people, support local industries, and promote the benefits of mineral development for the communities in which we operate. Meanwhile, we will safeguard the human rights of residents and achieve the long-term goal of promoting local socio-economic development and share the achievements in green and healthy growth with residents around mining areas.

Responsible Gold Mining Principles (RGMPs)

RGMPs promote the socio-economic development of communities associated with the company's operations, and honor communities by:

Community Consultations

We will consult regularly and in good faith with the communities associated with our operations on matters of interest to them, and will take account of their perspectives and concerns.

Understanding Communities

We will ensure that we engage with communities, including traditional leaders, in a culturally appropriate manner. We will be alert to the dangers of causing differentially negative impacts on women, indigenous people, children and other potentially vulnerable or marginalised groups. We will strive to ensure that the voices of these groups are heard and that this knowledge is integrated into how we do business.

Creating Value Locally

We will ensure that the communities associated with our operations are offered meaningful opportunities to benefit from our presence, including through access to jobs and training, and procurement opportunities for local businesses and social investment.

Seeking Community Support

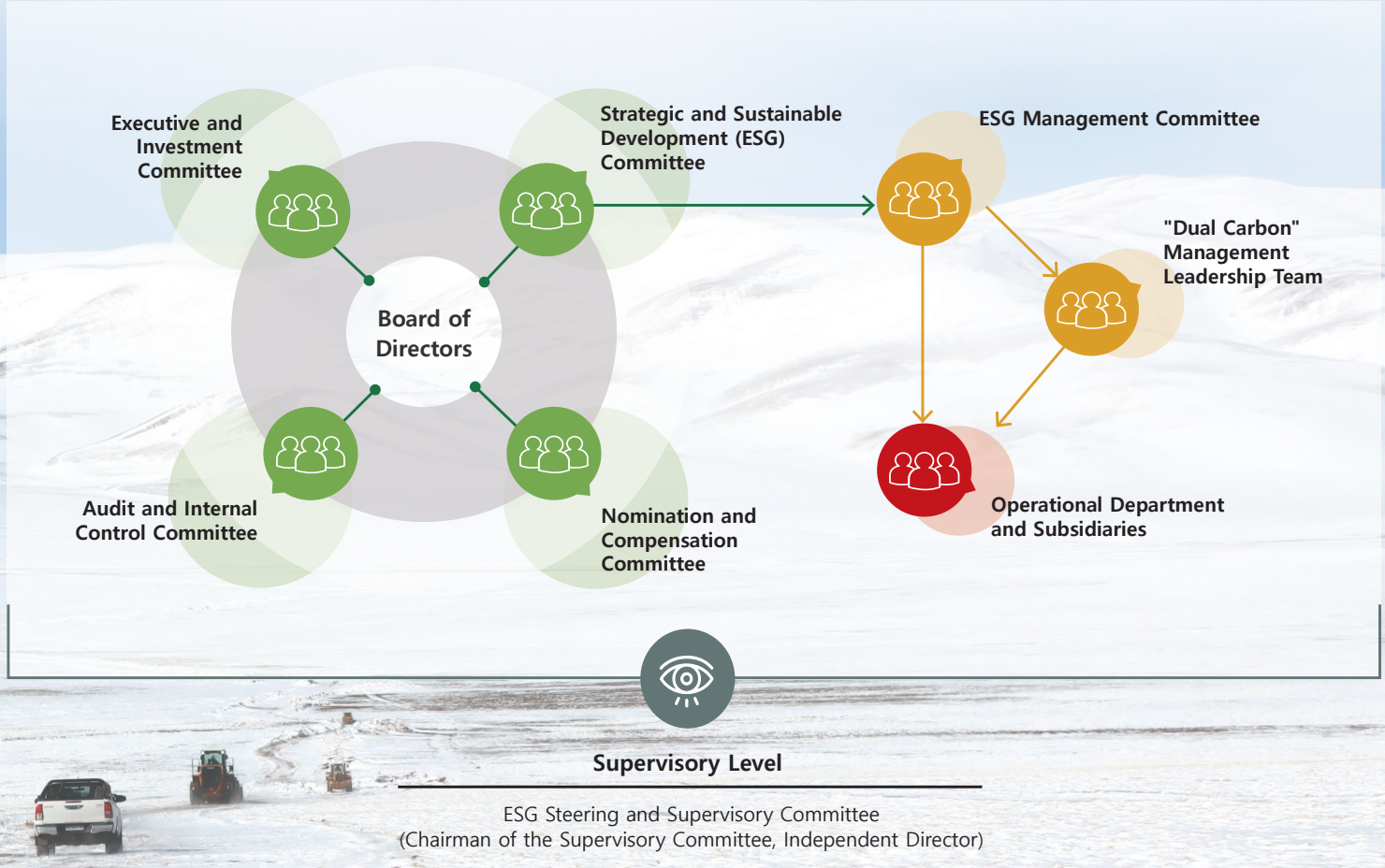
We will seek to obtain and sustain the broad-based support of communities affected by our activities.

CLIMATE GOVERNANCE

Zijin Mining adheres to the values of "value creation and common development" and the environmental concept that "green mountains and clear waters are as valuable as mountains of gold and silver." The Company continuously improves its ESG management. In 2020, the Strategy Committee was restructured to form the Strategic and Sustainable Development (ESG) Committee.

We have established a sustainable development (ESG) governance structure with Zijin characteristics to discuss climate change-related issues, identify climate risks and opportunities, and develop measures to address the potential impact of extreme climate disasters on our assets. We have also established an ESG governance system led by our Board of Directors to set medium- and long-term development goals for ESG and climate change-related issues, in which the ESG Management Committee and the "Carbon Peaking and Carbon Neutrality Goals" Management Leadership Team oversee our executive departments and subsidiaries to implement the goals.

Figure 5 Zijin Mining Climate Change Governance Structure



Board of Directors

The **Board of Directors** is the highest decision-making body for the Company's sustainable development and climate change efforts, which has primary responsibility for the development of the Company's strategy on ESG and climate change related issues. We regularly monitor and inspect our ESG and climate change-related work, establish key rules and regulations relating to ESG and climate change, supervise the implementation of effective measures by executive departments to address ESG risks and the potential impact of climate hazards, and examine and review investment decisions within the authority of the Board. Each year we review the Company's ESG and climate change-related reporting to ensure that the content complies with the disclosure requirements of international standards. We also provide operational and executive departments with information to measure key ESG and climate risks based on objective methodologies and criteria to ensure that different departments of the Company adopt consistent criteria to identify various types of ESG and climate risks.

The Board of Directors has improved its decision-making mechanism through the following four special committees: **the Strategy and Sustainable Development (ESG) Committee**, the Executive and Investment Committee, the Audit and Internal Control Committee, and the Remuneration and Compensation Committee. Among them, the Strategy and Sustainability Committee is responsible for identifying important ESG and climate change issues, formulating medium and long-term development plans and strategies for the Board of Directors by analyzing the global economic and industry situation, in combination with the Company's actual conditions and development strategy, and making recommendations and opinions on the Company's external public policies, climate risk response, sustainable development and ESG policies. In addition, the Strategy and Sustainable Development (ESG) Committee carries out work related to strategy development and research as requested by the Board of Directors, communicates the Company's strategies and objectives on ESG and climate-related issues to the management and executive levels, and provides the Board of Directors with the latest information on ESG and climate policy through regular meetings to discuss major trends in ESG and climate policy and related risks and opportunities. We also established a compensation assessment clawback mechanism, which comprehensively links management compensation to the Company's ESG performance assessment, ensuring the implementation of management's ESG governance responsibilities.

Management Level

The ESG Management Committee of the Strategy and Sustainability (ESG) Committee, chaired by the CEO, is the executive body responsible for developing the ESG and climate policy vision, strategy, framework, principles and policies, and for implementing strategies to address ESG and climate risks in the Company's decision-making, investments and operations. As a professional working body, the **"Carbon Peaking and Carbon Neutrality Goals" Management Leadership Team** is specifically responsible for setting objectives, designing strategies, delegating tasks, and assessing climate change issues, reviewing risks and opportunities related to climate change, and studying and deciding on major initiatives for "carbon peaking and carbon neutrality goals" management.

Implementation Level

The implementation of ESG and climate risk and "Carbon Peaking and Carbon Neutrality" management is an integral part of our business. We have set up different specialized departments and subsidiaries to guide, monitor and check the progress of the above work, identify ESG and climate risks, account for carbon emissions, manage related information, and track the policies of different countries and jurisdictions to timely update the "carbon peaking and carbon neutrality goals" management plan and corresponding management standards. In December 2022, the ESG Office was established as a priority group-level department, which is responsible for formulating ESG responsibilities and performance targets, thus guide and ensure the full implementation of ESG strategies and plans.We have set up an energy data platform to track and monitor our energy data situation and conduct research, feasibility analysis, and promotion of the latest low-carbon technologies and techniques.

Supervisory Level

We have established an ESG Steering and Oversight Committee to provide overall oversight and guidance of our ESG work at Board, operational and executive levels. Among them, an Executive Director is responsible for day-to-day decision making and management of ESG and climate-related work, including organizing the preparation of climate plans, handling daily decision-making and management and reporting significant climate-related matters to the Board and the Strategy and Sustainable Development (ESG) Committee.

ENHANCING CLIMATE RESILIENCE

Climate change poses both risks and opportunities for sustainable development. Therefore, it is important to face the climate issue squarely and enhance our resilience to climate change. We have established a comprehensive risk governance system and risk management mechanism in line with global standards to monitor the business environment, operating conditions, and the implementation of risk response measures. Therefore, we could figure out all kinds of risks in advance warning, timely identification of risk categories, their degree, causes, and development trends, and thus track and monitor the effectiveness of important risk response measures. As such, we can take targeted treatment measures to prevent, control, and mitigate risks in a timely manner.

Risk Identification and Assessment

We have identified, ranked, and managed the physical and transition risks that potentially affect the Company's assets in accordance with the TCFD recommendations, including the following key processes:

The physical and transition climate risks and opportunities for each asset in the short, medium, and long term are calculated at the executive level, taking into account the actual climate risk profile and the results of the climate model scenarios. The risks are ranked in order of their impact on all assets, compiled into a list, and submitted to the “Carbon Peaking and Carbon Neutrality Goals” Management Leadership Team and the ESG Management Committee for review.

At least once a year, the ESG Management Committee and the “Carbon Peaking and Carbon Neutrality Goals” Management Leadership Team will conduct short-, medium- and long-term climate risk and opportunity assessments and report the results to the Strategy and Sustainability (ESG) Committee and the Board of Directors for consideration.

Based on the results of the climate risk assessment, the Board of Directors formulates strategies, policies and mechanisms to address climate change, and delegates the Company's ESG and climate-related strategies and targets to the management and executive levels. In addition, the ESG Management Committee and the "Carbon Peaking and Carbon Neutrality Goals" Management Leadership Team will supervise the implementation of ESG and climate risk management at the executive level.

Physical and Transition Risks are embedded in the Climate Change Risk Assessment

Physical risks are assessed across eight climate hazards including extreme heat, extreme cold, river flooding, extreme precipitation flooding, tropical cyclones, landslides, wildfires, and water stress. We start by assessing the level of exposure of the asset to each type of climate hazard over a historical period based on model data, comparing the actual exposure of each asset to each type of climate hazard in the past. Where there is a discrepancy between the model data and the actual situation, we adjust the asset's level of exposure to that climate hazard category. By collating the historical results, we further use the model simulations to estimate the level of exposure of each asset to various climate hazards in the medium and long term for both the high and low emission scenarios, and thus to quantify the severity of the impact of climate hazards on the asset and to measure the potential interconnections (interdependencies, triggers, combinations, etc.) between climate risks. The risk management system considers and analyses the likelihood of climate risks occurring and the potential combinations of their impacts on assets, prioritises individual climate risks to inform risk response decisions and optimises resource allocation.

Transition risks are identified mainly through peer analysis and interviews with various sectors. Appropriate indicators were selected separately for the identified transition risks and opportunities, and then the difference in indicator values over a specific time horizon (called delta or Δ) was measured as a measure of the level of climate-related risks or opportunities for both high and low emission scenarios. The main data sources are the Central Bank Green Finance Network (NGFS) Stage 3 climate scenario data, and IEA, World Energy Outlook (WEO 2021) climate data. The level of risk for each climate transition risk and opportunity is derived by applying a correlation weighting (a qualitative scaling factor applied to each scenario indicator depending on the indicator's potential drivers and perceived relevance as a climate-related risk or opportunity).

Physical Risks

This physical risk assessment covers eight climate hazards including **extreme heat, extreme cold, river flooding, extreme precipitation flooding, tropical cyclone, landslide, wildfire, and water stress** (***Table 2***).

Table 2 Zijin Mining Physical Risk Assessment Category#

Physical Risk Category	Risk	Indicator (Unit of Measure)	Identification Method
Acute and Chronic	Extreme Heat	Warm Spell Duration Index (WSDI) (days)	According to CMIP6 downscaled data, an asset is considered to be at potential risk of extreme heat when temperatures are 90th percentile above the base period for a week
	Extreme Cold	Cold Spell Duration Index (CSDI) (days)	According to CMIP6 downscaled data, an asset is considered to be at potential risk of extreme cold when temperatures are below the 10th percentile of the base period for a week.
Acute	River Flooding	Maximum depth of inundation due to river flooding (m)	Assessing the current exposure level of assets to river flooding and extreme precipitation flooding based on Fathom-2 data. Applying climate models to predict future changes in extreme precipitation to estimate future changes in the exposure of assets to flood risk.
	Extreme Precipitation Flooding	Maximum depth of inundation due to extreme precipitation flooding (m)	
	Tropical Cyclone	Maximum wind speed of typhoon (knots)	The International Best Track Archive for Climate Stewardship (IBTrACS) provides the best track and wind speed of tropical cyclones to derive the risk of typhoons for each asset in the base period. It also analyses the risk of typhoons for each asset over different time periods and emission scenarios, based on climate models that predict future changes in tropical cyclone intensity.
	Landslide	Number of days per year with potential landslides (days)	The number of days per year that each asset is potentially at risk of landslides is calculated based on extreme precipitation and topographic data, and thus their level of exposure to landslides.
	Wildfire	Forest Fire Danger Index (FFDI) (days)	The frequency of climatic conditions that contribute to the occurrence of wildfires in an asset can be measured by a combination of temperature, humidity and wind speed.
Chronic	* Water Stress and Drought	Water pressure (classification of water pressure)	Assessing water stress levels according to the Water Stress Index provided by the World Resources Institute (WRI), which expresses the ratio of water withdrawal to water availability.

 # No assets of Zijin Mining are currently located close to the shoreline and therefore coastal flooding is not covered by this physical risk analysis.

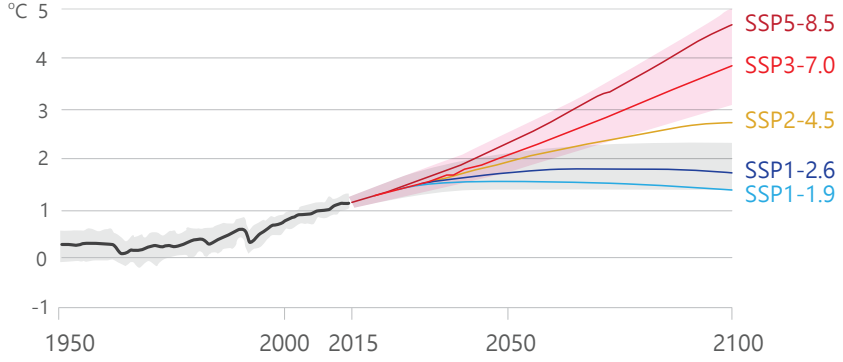
*** The data currently available from WRI uses the IPCC 5th Report climate scenarios, including RCP4.5 and RCP8.5.**

In addition, certain climate risks and opportunities arise from existing and emerging regulatory requirements related to climate change. Zijin Mining's assets are located globally, and legal compliance risks are extremely challenging for the Company as regulations vary across geographies. Current regulations are always included in Zijin Mining's climate-related risk assessment, covering not only where the company operates, but also where it trades.

Patterns of physical impacts caused by climate change can be referred to as "physical climate scenarios". Typically, physical climate scenarios present the results of global climate models (also known as "atmosphere circulation models"), showing the change of the Earth's climate in response to atmospheric GHG concentrations. For this physical scenario, we have chosen two Shared Socioeconomic Pathways (SSPs) from the 6th Report of the Intergovernmental Panel on Climate Change (IPCC)[4], namely SSP1-2.6 (low emission scenario) and SSP5-8.5 (high emission scenario).

In order to comprehensively assess the physical climate risks posed to our assets by different climate emission scenarios, we identified potential physical risks in the short, medium, and long term based on the TCFD recommended framework and quantitatively assessed the potential physical risks posed to our 42 key assets by climate hazards in the baseline period, the 2030s and 2050s under the high and low emission scenarios. The baseline period represents current climate conditions and is able to represent short-term potential climate risks, and the 2030s and 2050s represent medium and long-term potential climate risks, respectively.

Figure 6 IPCC Shared Socioeconomic Pathways scenarios[5]



Applied IPCC Climate Scenarios and Time Horizons

	SSP1-2.6	Scenario	SSP5-8.5
Description	It is assumed that countries will reduce their GHG emissions in accordance with the Paris Agreement, thereby controlling global warming in this century to no more than 2.0°C above the pre-industrial revolution (1850) and achieving sustainable development.		Assuming a business-as-usual scenario where countries do not implement GHG reduction measures, carbon emissions in 2100 triple those of 2015, resulting in a global temperature rise of 4.4°C by the end of the century compared to the pre-industrial revolution, and countries need to implement climate adaptation and mitigation measures.
Temperature Rise	2.0°C		4.4°C
Time Horizons	2030s and 2050s		

4 The Intergovernmental Panel on Climate Change (IPCC) was founded in 1988 to provide a comprehensive assessment of the state of scientific, technological and socioeconomic understanding of climate change, its causes, potential impacts, and coping strategies. The IPCC is currently in its sixth assessment cycle.
5 IPCC (2021) Figure SPM.8a.

Water stress, along with drought and landslides, are the main climate risks currently facing the Company (***Table 3***). As global warming increases, the Company's level of risk will increase further, with the SSP5-8.5 (high emissions scenario) predicted to cause a much greater increase in asset risk than the SSP1-2.6 (low emissions scenario) and to have a higher impact in the 2050s than in the 2030s. Understanding and accessing climate risk-related content in advance will allow us to more proactively manage them in our ground plans and reduce our physical operational risk. The physical risks that we currently face at very high or high risk levels are within reasonable limits of our predictions and have a complete set of management and safeguards in place (***Table 4***), giving us sufficient confidence that we can keep them within manageable limits.

Table 3 Overview of Physical Risk Assessment Results

Climate Hazards	Baseline	2030 SSP1-2.6	2030 SSP5-8.5	2050 SSP1-2.6	2050 SSP5-8.5
Extreme Heat					
Extreme Cold					
River Flooding					
Extreme Precipitation Flooding					
Typhoon					
Landslide					
Water Stress and Drought					
Wildfire					

Exposure Rating: Very High / High / Moderate / Low / Minimal

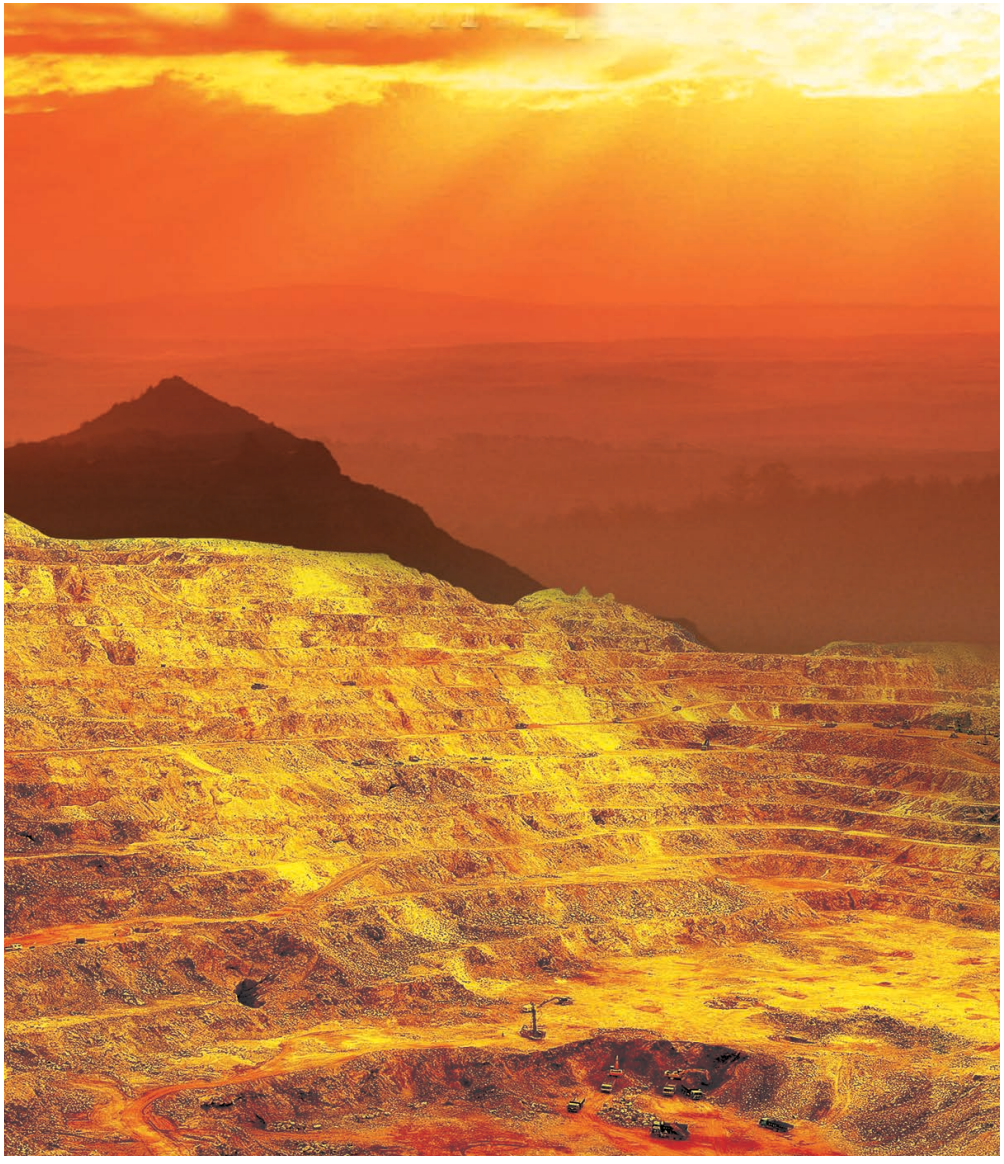


Table 4 Zijin Mining Physical Risk Impacts and Mitigation Measures

Climate Hazards	Potential Impacts	Assessment Results	Period of Influence	Mitigation Measures	Risk Level
Extreme Heat	Increased demand for water and energy to cool down temperature-sensitive equipment; At the same time, the efficiency of the cooling system decreases, resulting in additional operating expenses. Extreme high temperatures increase the demand for water and energy, or increase the pressure on water pipes, ultimately leading to pipe bending and water supply issues. Extreme heat causes assets to emit more aerosols and may threaten the health and safety of personnel, thereby reducing operational efficiency and adding expenses.	No assets are currently at risk of extreme heat. However, under the 2050 SSP5-8.5 scenario (high emissions scenario), the risk of extreme heat is predicted to be high or very high for nearly half of the assets and to have a more significant impact on mining assets. By that time, extreme heat is becoming the most prevalent climate risk for the company.	Medium- and long-term	• Build weather (temperature, humidity and wind speed, evaporation) monitoring systems to provide advanced warning to staff for preparedness against extreme heat and heat stress. • Implement safety and health measures for work at high temperatures to prevent personnel from being harmed. Increase the proportion of water recycled to avoid stress on the water supply and water-consuming equipment.	Very High
Extreme Cold	Loss of revenue due to limited operation of assets during periods of extreme cold temperatures. Health and safety risks to personnel due to extreme cold temperatures, resulting in reduced operational efficiency.	Assets in the mid-high latitude and high altitude regions including China's Shanxi, Inner Mongolia and Tibet, as well as Russia and Tajikistan are frequently affected by extremely cold air from the Arctic and Siberia during the winter, of which some have already been made cold-proof. Snowstorms and persistent extreme low temperatures may affect the supply chain and mining operations. Under global warming, the frequency of extreme cold events is expected to fall in the future and the Company's assets may not be materially impacted as risk of exposure is low.	Short-term	• Optimize the design of mines and their power grids to improve their resilience to low temperature and severe weather conditions such as persistent freezing and snowstorms.	Low
Flooding	Additional repair and maintenance expenses for mechanical damage to assets, loss of income from suspension of operations and reduced operational capacity. Flood-contaminated water resources cause a shortage of fresh water supply, resulting in reduced productivity. Extreme precipitation increases pressure on wastewater treatment, resulting in a higher volume of discharged water and more external drainage, and can trigger landslides which affect production safety.	We initially identified 7 potentially high-risk assets based on Fathom-2 data. After further verification, it was found that 4 of these assets have not experienced the impact of flooding in the past. After data reconciliation, three assets located in Yunnan, Fujian and Serbia are identified to be at higher risk of flooding in all periods.	Short-, medium-, and long-term	• Drainage facilities capable of withstanding rare and extremely heavy rainfall (500- or 1000-year event). Make a flooding disaster responding plan for extreme precipitation and prepare adequate flood protection items. Organise at least one flood drill annually to identify and summarise issues, so that emergency management improves.	Low
Typhoon	Additional repair and maintenance expenses for damage to assets from strong winds and heavy rainfall, loss of income from suspension of operations during typhoons and reduced operational capacity. Health and safety of personnel possibly threatened. Typhoon-related heavy rain can cause potential risks of floods and river flooding.	China's coastal areas are occasionally exposed to typhoons from the western Pacific Ocean and the South China Sea, predominantly in summer and autumn. Only assets located in Fujian, which is a coastal area in China, are at higher risk of typhoon threats that is forecasted to intensify under global warming.	Short-, medium-, and long-term	• Ensure that mine infrastructure and buildings can withstand super typhoon-level hurricanes. • Make a typhoon disaster responding plan, prepare enough emergency supplies, and be alert to the typhoon warning information of the Meteorological Bureau.	Moderate

Table 4 Zijin Mining Physical Risk Impacts and Mitigation Measures (con't)

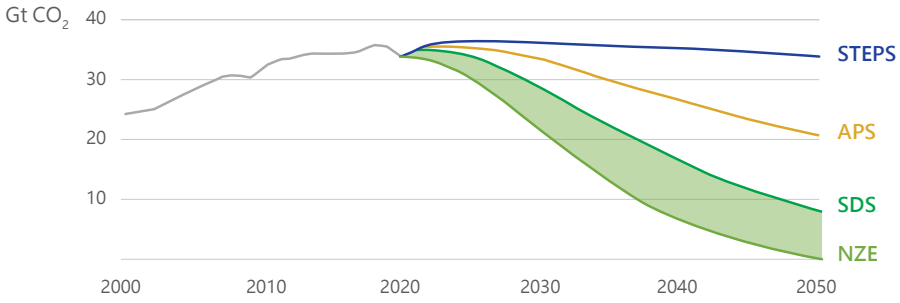
Climate Hazards	Potential Impacts	Assessment Results	Period of Influence	Mitigation Measures	Risk Level
Landslide	Additional repair expenses for damage to machinery by landslides. Economic losses if critical machinery is damaged rendering assets inoperable and production is halted. Disruption or damage to roads from landslides may negatively impact on the supply chain of the business.	Assets located on or near hillsides are more susceptible to landslide due to heavy precipitation. Approximately 17% of assets are currently at risk of landslides, including certain assets located in Xinjiang, Inner Mongolia, Fujian, Shanxi, Jilin, Australia, Russia and Kyrgyzstan. Around 20-25% of assets are at risk of landslides in the future as increased precipitation is predicted to increase risk of landslides.	Short-, medium-, and long-term	• Conduct regular geological surveys of slopes and safety inspections, and enhance the slope monitoring system. • Establish a landslide forecast system to reduce its impact.	High
Water Stress and Drought	Unstable water supply may cause suspension of facilities for mining and smelting processes that are highly water consumptive. Shortage of water in cooling systems reduce smelter capacity. More aerosol emissions during the production processes may result from less water supply, creating more reliance on tap water for cleaning purposes and thus inflating water prices. Additional operating expenses such as more water pipes and utilities infrastructure will be incurred to reduce the mining assets' vulnerability to water stress and drought. Competition for water resources resulting in social and political conflicts may negatively impact the Company.	Assets located in arid, semi-arid and desert areas with minimal precipitation are exposed to greater water stress and drought risk. During the baseline period, the Company's assets in Western and Northern China (Xinjiang, Inner Mongolia, Qinghai, Henan and Shanxi), Central Asia (Tajikistan and Kyrgyzstan), southwestern Australia and Eritrea in East Africa were rated at high risk of water stress. After further data reconciliation of assets rated with high water stress, it was found that all assets in Henan and Shanxi, and some assets in Inner Mongolia and Central Asia have had sufficient water resources during past operations and therefore they are not at risk of water stress.	Short-, medium-, and long-term	• Implement water resources monitoring plan, impervious treatment of cisterns, rainwater management, and other physical measures or procedures to protect surface water and/or underground water resources. • Strengthen the protection of surface water and groundwater resources through quarterly monitoring of water quality at rivers near the mine site, and key areas within the mine site (such as upstream and downstream of the tailings storage facilities and landfill site) and other locations, and take appropriate actions promptly. • Manage water-related risks in a timely manner based on the "water balance model" for each mine site. Avoid water resource protection areas as much as possible when conducting project construction or acquisition. For all projects, there will be water analysis and assessment before water is withdrawn and used. Affiliated entities directly withdrawing water from rivers, lakes or underground shall submit a "Water Resource Justification Report".	High
Wildfire	Additional repair expenses for mechanical damage caused by wildfire; Loss of revenue due to suspension of asset operations; Disruption of the road may negatively impact the supply chain of the business.	Certain assets in Inner Mongolia, Australia, Eritrea, and the DRC are currently at high risk of potential wildfires. Global warming is predicted to increase the risk of extreme heat and assets located in Xinjiang are predicted to have a significantly increased risk of future wildfire events.	Short-, medium-, and long-term	• Enhanced assessment on weather monitoring and warning systems of assets and its nearby wooded areas. Increase use of water-cooling methods to avoid wildfires in high-temperature weather conditions. • Install firefighting equipment and strengthen cooperation with local fire units.	High

Transition Risks

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

We use the World Energy Outlook 2021 IEA's Sustainable Development Scenario (SDS) (low-emissions scenario) and the Stated Policies Scenario (STEPS) (high-emissions scenario) to assess potential transition risks in the medium and long term (***Table 5***). Where the baseline period represents the current situation, and the 2030s, 2040s and 2050s represent the short-, medium- and long-term potential transition risks respectively.

Figure 7 IEA Climate Change Scenarios[6]



Applied IEA Climate-Related Scenario and Time Horizons

IEA Sustainable Development Scenario (SDS)	Scenario	IEA Stated Policies Scenario (STEPS)
SDS is in line with the Paris Agreement's goal of "keeping a global temperature rise below 2°C". It is projected to exceed the 1.5°C level in the early 2030s and peak under 1.7°C around 2050.	Description	STEPS is assuming business goes on as usual, based on the policies and measures that governments around the world have already put in place and on announced policies as expressed in official targets and plans.
1.7°C	Temperature Rise	2.6°C

Time Horizons: 2030s, 2040s and 2050s

6 IEA, World Energy Outlook 2021

The climate-related transition risks that Zijin Mining faces are derived from various aspects including policy & regulation, legal, technology, market, and reputation.

Government and regulatory compliance policies require stricter enforcement

From the policy perspective, to achieve the goal of carbon reduction, governments and relevant regulatory bodies will introduce policy measures to promote green and low-carbon transformation in various industries. This will affect the production and operation of mining enterprises and put great pressure on high emission and high energy consumption enterprises. At the same time, governments and relevant agencies may also impose additional taxes, which may increase the cost burden on enterprises, leading to lower profit margins, higher storage costs and stranded inventories. Tightening carbon regulations, as evidenced by the CO_2 reduction targets and rising carbon prices outlined in the European Green Deal, will create greater compliance risks for the mining industry, prompting companies to further reduce the potential environmental impact of their operations.

Benefits of new energy-related commodities and increased expectations for carbon reduction in the supply chain

From a market perspective, downstream customers and consumers will prefer to shift to green mining and to the growth in demand for carbon-friendly metals, which will reduce demand for high-emission metals, leading to a reduction of revenue. As investors become more aware of sustainable development, investment and financing will focus on mining companies that are actively involved in green transformation and decarbonization.

The green energy saving technology is highly important in the long term, and the demand for funding has increased

From a technical perspective, the process of low-carbon transformation, means that enterprises are faced with the uncertainty brought by technological transformation. In order to reduce carbon emissions in metal production processes, enterprises may need to invest in new production processes, but new technologies and advanced production processes are costly and not necessarily effective in the short and medium term.

While risks exist, there are also opportunities. With the growth and development of new energy industry, the market preference will shift to renewable energy and decarbonization technologies. The demand for key raw materials and rare metals in green energy will increase steadily, bringing opportunities to enterprises. At the same time, the use of renewable energy and the application of low-carbon technologies will help enterprises to transform and save energy costs, generating benefits to enterprises.

__Table 5__ shows the levels of specific transition risks and opportunities in different scenarios and time horizons. __Table 6__ shows the specific impact and response measures.

Table 5 Overview of Transition Risk Assessment Results

Category	Risk/Opportunity	2030	2040	2050
Risk	Regulatory pressure on GHG reduction			
Risk	Carbon Pricing			
Risk	Increased customer demand for low-carbon products and services			
Risk	Insufficient supply of fossil fuel			
Risk	Uncertainties in electricity price			
Risk	R&D and investment of low-carbon transition technology			
Risk	Demand for disclosure of climate-related risk from stakeholders			
Opportunity	Increased customer demand for low-carbon products and services			
Opportunity	Use of Renewable Energy			

Table 6 Zijin Mining Transition Risk Impacts and Mitigation Measures

Category	Transition Risks/Opportunities and Indicator	Description	Impact Period	Mitigation Measures	Level
Risk	**Regulatory pressure on GHG reduction Carbon intensity** indicator: yearly decrease under both scenarios and the degree of decline increases annually on latest NGFS data.	Zijin's assets are spread across the global with varying regulations across regions. Legal compliance risks pose a significant challenge. Towards China's carbon peaking and carbon neutrality goals, Zijin is committed to achieving carbon peaking by 2029. Subsequently, the Company strives to reduce emissions year by year and reach carbon neutrality by 2050. Countries where assets are located, such as Kyrgyzstan, Colombia, Russia, and Australia, have each announced their carbon neutrality goals. Long-term macro policy adjustment pressures will be transmitted to Zijin's own production and operation activities.	Medium and Long term	• At the implementation level, Zijin's climate change management department, legal department, and various operational sites conduct research and monitoring on relevant laws and identify risks. To reduce the management complexity caused by differences in various jurisdictions, Zijin is committed to carrying out international best practices and maintaining high standards. • Establish our own zero carbon technology program and a "Carbon Peaking and Carbon Neutrality Goals" intelligent platform, following international best practices at a high standard. • Implement product lifecycle carbon footprint assessment. • Strengthen control capabilities over carbon emissions for the Company itself and the upstream and downstream sectors.	High
Risk	**Carbon pricing (e.g. emissions trading, carbon tariff system)** **Carbon price** indicator: indicator: exponential increase in both scenarios of IEA WEO 2021 and the rate of increase is growing. Under the high-carbon scenario of IEA STEPS, the carbon price will reach an average of USD 65/ton CO_2 in 2030.	Carbon pricing mechanisms in different jurisdictions, including carbon emissions trading which has faced increasing regulation, may create additional financial and operational costs for Zijin's global assets, further affecting the stability and cost of energy supply. Companies that exceed the emissions may be under financial pressure and be at risk of restrictions on production.	Short, Medium, and Long term	• Zijin will address the risks of carbon pricing mechanisms from both internal and external dimensions: Through the release of this report, Zijin publicly disclosed its carbon peaking and carbon neutrality roadmap and identified corresponding emission reduction measures. While implementing the carbon emission reduction strategy, Zijin will closely monitor carbon pricing mechanisms in the countries where its assets are located and globally, especially carbon emission trading mechanism requirements. Zijin aims to move towards international best practices and proactively and flexibly respond to challenges.	High
Risk	**Increased customer demand for low-carbon products and services** **Carbon emissions per capita** indicator: decreases in the low emission scenario IEA SDS, and peaks in the high emission scenario IES STEPS around 2040 then decreases annually, according to the latest NGFS data.	Rising demand for low-carbon products will put pressure on the industrial chain, affecting downstream manufacturers' preference for **metals and minerals with lower carbon footprints**, thereby impacting the market performance of enterprises.	Medium and Long term	• Zijin is comprehensively entering the new energy and new materials sector, targeting metals and mineral resources related to the low-carbon economy, such as copper, lithium, cobalt, nickel, and platinum group metals. The Company is accelerating its progress to become an important global supplier of new energy metal products, while extending into the new materials industry • Implement electrification technologies and substitute energy sources with clean energy.	High
Risk	**Insufficient supply of fossil fuel** **Oil supply** indicator: is on an upward trend under the high-emission scenario, while under the low-emission scenario, it rises from 2020 to 2030 and then begins to decline, according to IEA WEO 2021 data.	As the energy supply crisis becomes increasingly severe due to adjustments in the energy structure in different regions, the supply of coal and diesel will decrease accordingly. Scope 1 emissions of Zijin includes primary energy directly produced and consumed by global operations, primarily from diesel consumption of mobile mining equipment. The availability of fossil fuels will affect production stability and increase production costs.	Medium and Long term	• Carry out low-carbon transformation and technological improvements, such as boiler upgrading and diversify different energy sources from fossil fuels to alternative energy sources. • Securing renewable energy supplies (such as installing rooftop photovoltaic systems) and proactively sign green power contracts with energy companies.	High

Table 6 Zijin Mining Transition Risk Impacts and Mitigation Measures (con't)

Category	Transition Risks/Opportunities and Indicator	Description	Impact Period	Mitigation Measures	Level
Risk	**Uncertainties in electricity price** **Price of electricity** indicator: increase but gradually decrease after new energy takes greater proportion of the overall energy structure in 2030, according to recent NGFS data.	**Adjustments to electricity markets and trading methods, and fluctuations in electricity prices** will affect operating costs. Zijin's Scope 2 emissions are mainly from secondary energy consumed by its global operations, whereas its primary energy source is from electricity power grids of the countries where the assets are located.	Short term	• Follow the Guiding Opinions of the National Development and Reform Commission and the National Energy Administration on "Accelerating the Construction of a National Unified Power Market System", to achieve the China's "Dual Carbon" goal. • We continuously track the construction of national and local power trading markets, engage in power trading and clean energy trading activities, and obtain long-term benefits in market-oriented operations by virtue of green, low-carbon, energy-saving production processes and low energy consumption.	Low
Risk	**R&D and investment of low-carbon transition technology** **Low-carbon investment index** indicator: rise exponentially under two IEA climate scenarios, according to the data of IEA WEO 2021.	The technological backwardness of low-carbon transition related to **high-energy processes in mining and smelting processes** may lead to Zijin falling behind its competitors in the industry and thus affecting its market share.	Medium term	• Conduct a feasibility study and cost-benefit analysis of low-carbon technologies. • Increase investment on research and development in carbon neutralisation technologies. • Carry out breakthrough research on core industrial energy-saving technologies and negative emission technologies.	Moderate
Risk	**Demand for disclosure of climate-related risk from stakeholders** There is no corresponding indicator for this risk, which is obtained through empirical qualitative assessment.	**Regulators, investors, customers and consumers** are increasingly demanding for public disclosure of climate risks and low-carbon products. Non-compliance disclosures and improper climate performance may lead to reputational damage, falling share prices and financing barriers, which pose risks to business operations and revenue.	Medium and Long term	• Communicate with the public through its official website, ESG reports, and various ratings, and commit to disclosing information in accordance with the TCFD framework. • By providing transparent disclosure, Zijin aims to improve its international climate-related assessments, actively respond to climate-related inquiries and questionnaires from various stakeholders, and enhance the Company's international image and reputation.	Low
Opportunity	**Increased customer demand for low-carbon products and services** **Number of electric vehicles sold globally** indicator: expected to reach about 200m in 2030 under high emissions scenarios, according to recent data from the IEA.	As the new energy sector (e.g., electric vehicles) grows and develops, market preferences shift towards renewable energy and decarbonization, the demand for key raw materials for green energy and various rare metals (e.g., copper, silver, cobalt and lithium) will steadily increase.	Medium and Long term	• Increase product categories and production capacity of existing rare metal products such as copper, silver, lead-zinc, molybdenum, copper, silver, lead-zinc smelting products, copper strips and copper tubes. • Increase investment and production of key green energy raw materials such as lithium, riding on the peak of the new energy industry.	High
Opportunity	**Use of renewable energy** **Renewable energy installed capacity** indicator: rising trend under both scenarios according to the IEA WEO 2021 data.	The use of renewable energy (such as **distributed photovoltaic and wind power**) will help enterprises achieve low-carbon transition and save energy costs, bringing benefits to enterprises.	Medium and Long term	• Reduce Scope 2 carbon emissions through using renewable energy and future energy-saving technology replacements. • Expand on existing projects that involve wind, photovoltaic and hydropower energy, heat pump technology, copper concentrate spin-floating smelting technology, flue gas acid production energy-saving technology, efficient energy-saving electrohydraulic control integration technology, smelting low-temperature waste heat utilization technology, highly effective crushing and grinding technology, waste heat power generating technology for sulfur concentrate, permanent magnet motor promotion and other new electrification mining and smelting technology.	Moderate

LOW-CARBON TRANSITION AND CLIMATE CHANGE STRATEGY

Under different scenarios of risks and opportunities, we will establish risk mitigation and adaptation mechanisms and discover opportunities in the mining industry brought about by the future low-carbon era.

Enabling opportunities in the new energy and materials industry

The projected growth of the green metals market has created innumerable new markets and industry clusters. Zijin Mining's low-carbon transition at an accelerated pace means more development opportunities in the new energy and material industry, while the use of renewable energies (e.g. distributed photovoltaic and wind power) will also save costs for the Company.

Acquiring strategic eco-friendly mineral resources

Mineral resources are at the core of any mining companies and the use of eco-friendly and quality mineral resources is important for the global low-carbon energy transition. Upon the increasing demand of high-quality mineral resources, Zijin Mining will strive to confront challenges in the acquisition of such minerals.

Strengthening ESG governance internationally

Developing management systems to follow international ESG (Environmental, Social, Governance) standards is of great importance for accelerating the low-carbon transition for the mining industry. Zijin Mining has already established a top-down ESG management system under the Board of Directors, and we will continue increasing the number of low carbon related key performance indicators to speed up the green transition.

Refining operational management

As the need for global energy reform gets steam, Zijin Mining will face challenges to continuously improve and refine its productions and operations, and thus lower costs. The Company's GHG Scope 1 emission is mostly due to diesel consumption of mobile mining equipment, and the supply of related fossil fuels will present challenges for cost reduction and efficiency improvement.

Green technology and engineering innovation

Technological innovation is one of the important driving forces for global green and low-carbon transformation. New energy and new materials technologies are changing rapidly around the world, putting pressure on enterprises in terms of technological and engineering development, application updates, and iteration. Zijin Mining will continue to track the trends of new energy and material technology, applying our original "integrating five ore treatment processes into one" green circular mining engineering management model to improve resource utilization rates. At the appropriate time, the Company will also advance into the circular economy development of "urban mines."

Pressures from Regulations and Policies

More and more global low-carbon transition policies have been introduced one after another, in which carbon taxes may further increase and added costs will arise from supporting control and regulation mechanisms of carbon emissions trading in different jurisdictions. Zijin Mining's global assets may be included in the scope of carbon trading controls and the additional operational and financial costs may affect the stability and cost of energy supply. Companies with excessive emissions may face financial pressure and the risk of production restrictions.

Pressure from water stress and drought on production and operations

Due to the large water consumption in mining and smelting operations, unstable water supply may cause the suspension of water-consuming facilities operations and a loss of revenue. At the same time, unstable water supply may cause a shortage of water in cooling systems, therefore reducing the productivity of smelters. Reduced water supply may also lead to more aerosol emissions during the production process, resulting in greater reliance on tap water for cleaning purposes and thus inflating water prices. Additional operating expenses such as more water pipes and utilities infrastructure will reduce the mining assets' vulnerability to water stress and drought. If competition for water resources leads to social and political conflicts, it may have a negative impact on the enterprise.

The impact of landslides on the supply chain

Assets located on or near hillsides are more susceptible to landslide risks caused by heavy precipitation. The damage to machinery caused by landslides requires additional repair expenses and, if critical machinery is involved, may affect the production and profitability of the asset. Landslides cause economic losses by rendering the asset inoperable and if landslides cause disruption or damage to roads, there will have a negative impact on the supply chain of the business.

Zijin Mining operates with purpose

"Mining for a Better Society"

and the risk & opportunity arise from global low-carbon economy, the following three major strategies have been formulated:

1

Embracing planetary change

provide the materials the world needs for a low-carbon future to help achieve the goals of the Paris Agreement in the world

2

Revitalising industrial processes

build a clean and low-carbon industrial chain economy to benefit more people with Zijin Mining's presence

3

Maintaining continual improvement

adhere to the green, high-quality and sustainable development path, to reduce the carbon footprint of industrial development throughout the process

Embracing Planetary Change

A low-carbon future for humanity below 2°C

Scoping in Key Minerals

Keeping to the world's development trajectory, Zijin Mining will moderately increase investment in mineral resources both in domestic and surrounding countries, and thus create a dual linkage between markets and resources. Zijin Mining will focus on the development and investment of mining projects that will have a significant impact on the Company's future, and achieve mergers and acquisitions on major mining assets. Making important breakthroughs, we will continue leverage the advantages of self-initiated exploration and prospecting, increase the strength of exploration in existing mining areas, and strive to achieve significant advancements in increasing reserves.

While consolidating the position of copper, gold, zinc, silver and other primary mineral resources, Zijin Mining will also focus on the key minerals of new energy materials such as lithium, cobalt, nickel, vanadium, non-metallic minerals and rare metals such as platinum group related to hydrogen energy. We will also focus on rare metals associated with non-ferrous metals related to semiconductor materials.

Zijin Mining will strive to accelerate the application of resource advantages to the economy and society. We aim to vigorously enhance the output of copper, gold and other superior minerals, as well as new energy minerals such as lithium, thus increase our market share and influence in China and globally. We will utilise the full production capacity of important incremental projects while advancing their technological potential. Together with downstream smelting and processing ductile materials, we hope to achieve synergies in stability, high yield and efficiency for the new energy and materials industries.

Combining our own technical accumulation in efficient mineral development, We continuously pursue technological breakthroughs, and realise mineral development with higher efficiency, lower cost, and lower emissions.

Creating economies of scale in the global context

A number of major flagship projects were completed and commenced operation ahead of schedule including three world-class copper mines, namely the Kamoa-Kakura Copper Mine in the Democratic Republic of Congo (DRC), the Serbia Zijin Copper MS mine and the Julong Copper Mine in Tibet. These projects have supported Zijin Mining to be the company with the fastest growth and most copper output from mines in the world, making it enter the top ranks of the global metal mining industry. The second phase of the Kamoa-Kakura Copper Mine in the Democratic Republic of Congo (DRC) was commissioned ahead of schedule in March 2022, and the construction of Kamoa's 500,000 ton/year copper smelter project has been accelerated, which will make it the largest copper smelter in Africa upon completion. Serbia Zijin Copper MS mine has undergone a technical reform and expansion of 10 million tonnes which has been successfully completed and put into operation, and the VK mine's additional 40,000 tons/day technical upgrade project was successfully completed and put into operation. was successfully completed and put into operation. The Norton Binduli gold mine heap leaching project in Australia and the Zerafshan hot-pressed oxidation gold mine project in Tajikistan are in good and orderly progress.

Materials for new energy

The scarcity of upstream materials has become an important constraint on the transition to a low-carbon global economy. Zijin Mining now owns the Argentine Tres Quebradas (3Q) lithium brine project, the Tibet Lakkor lithium brine project and the Hunan Daoxian Xiangyuan Lithium Mine project, with a total equivalent lithium carbonate resource about 10.27m tons. The Company will fully utilize its advantages in the mineral and metal raw materials field, and accelerate the development of lithium resources and strive to become an important supplier of lithium resources worldwide. At the same time, the Company will also appropriately extend to the downstream new energy related materials industry to ensure stable supply of new materials in the market.

Zijin Mining has set up a New Energy and Materials Research Institute to accelerate the research and development of new materials such as lithium iron phosphate, electrolytic copper foil and high-performance alloy materials. In the future, we will continue to accelerate the deployment of new energy related materials and make breakthroughs in the material field by giving full play to our source advantages.

Entering into the energy storage industry

The global energy transition is unstoppable and the future energy system will be composed of diversified energy types, with the majority being new energy. The new energy system must complement the volatile and intermittent nature of wind power and photovoltaic power generation. Technically speaking, energy storage can indeed be flexible to meet the needs of new energy systems. Therefore, from the overall perspective of the future new energy system, the “just-in-time” nature of energy storage is an indispensable asset to achieve mass access to renewable energy.

Zijin Mining is focused on combining renewable energy with the hydrogen energy industry, and use ammonia as the energy storage carrier to develop a “zero carbon circular industry chain” that involves firstly renewable energy, then hydrogen production electrolysis, synthetic ammonia, ammonia hydrogen storage and finally hydrogen energy. Such zero carbon circular chain will provide an important technical support for the transformation of regional clean energy.

Electrolytic copper foil

Electrolytic copper foil is an important material for the manufacture of copper clad laminates (CCL), printed circuit boards (PCB) and lithium-ion batteries. As a copper mining manufacturer, the Company will proceed to increase the added value of copper products. The Company achieved the production capacity of lithium copper foil by the end of 2022, and will complete more than 10,000 tonnes of 4.5-12 μm copper foil in the next three years.

Sputtering target and coating field

A sputtering target is one of the main materials used to prepare thin films, and the sputtering target material is bombarded by high-speed charged ions that breaks the solid target material into tiny particles, which then forms a spray and coat another material, which is known as the substrate. Through our Zijin Mining Group Gold Smelting Co., Ltd., we are committed to expanding the production and application of gold targets and coating materials.

Lithium iron phosphate

As an important source for new energy vehicles and the energy storage industry, lithium iron phosphate is very safe, has a long lifecycle, and has been widely recognised in the market with an annual compound growth rate of nearly 100%. Along with the rapid development of downstream industries, we have been actively allocating domestic and overseas lithium resources and striving to gain a leading position in the market for iron lithium phosphate products.

Silver powder

As the core raw material of photovoltaic conductive silver paste, it is the most important auxiliary material for photovoltaic batteries and directly affects the photoelectric conversion efficiency of photovoltaic batteries. We focus on the research and development of silver powder projects through our subsidiary Fujian Zijin Precious Metals to support the photovoltaic industry.

The "Major industrial innovation platform for ammonia and hydrogen energy" jointly created by Zijin Mining and Fuzhou University, among others, has achieved significant breakthroughs.

Zijin Mining, Fuzhou University and Beijing Sanju Environmental Protection New Materials Co., Ltd. carried out a strategic cooperation to establish a joint venture company and China's first "major industrial innovation platform for ammonia and hydrogen energy", which will accelerate scientific and technological advancement. Through a "win-win cooperation" approach among the three parties, the joint national ammonia-hydrogen energy innovation team will help relieve bottlenecks in the national hydrogen energy industry development through integrating production, learning, research and application. Furthermore, a joint national engineering research centre for ammonia industry catalysis and high-tech enterprises will be established. Developing a trillion-level industry chain that integrates green ammonia, hydrogen energy and renewable energy is crucial to ensure national energy security and sustainable social and economic development.

Revitalising Industrial Processes

Cleaner production to benefit wider society

Embrace the Green Financial Development Opportunity

Zijin Mining will fully embrace the green financial market and liaise with financial institutions and industry partners on the application of green financial instruments in the mining and mineral supply chain, as well as develop green low-carbon projects with broader stakeholders.

Zijin plans to launch a China Certified Emissions Reduction (CCER) program to develop clean energy projects such as photovoltaic power generation, wind power and hydropower, as well as carbon-neutral forestry construction projects to further enhance the Company's carbon asset reserve capacity. We will make full use of the carbon trading market offsetting mechanism and maximise benefits through the offsetting of quotas and CCERs to reduce costs and emissions and increase efficiency of enterprises, achieving a win-win situation. In February 2022, the Hainan International Carbon Emission Trading Centre was approved for establishment, primarily trading blue carbon products and various types of carbon financial products. The Company actively assisted in the construction of the Hainan International Carbon Emission Trading Centre by way of shareholding and contributed to the construction of a world-class voluntary carbon trading market in China.

Driving up and down-stream industry value chain emission reduction

We have incorporated the Scope 3 GHG accounting work into our short-term plans for future sustainable development, working together with upstream and downstream companies to raise awareness of energy saving and emission reduction throughout the entire value chain, driving the transformation of the entire value chain to a low-carbon economy.

- We will promote Zijin Mining's energy conservation and emission reduction strategic measures to suppliers and customers through capacity-building, knowledge advocacy and open day activities to guide upstream and downstream enterprises to voluntarily reduce emissions in the value chain.
- We have scheduled the Scope 3 emission accounting into agenda, included the Company's key suppliers and customers, and conducted Zijin's Scope 3 emission baseline research with our partners. Under the premise of striving to achieve the peak and neutrality of Scope 1 and Scope 2 emissions in 2029 and 2050, respectively, we will pay long-term attention to our Scope 3 emissions and maintain good communication with downstream customers to jointly promote the interconnection of carbon emission data, and start to build Scope 3 carbon emission accounting, monitoring, and management system.
- We will work together with key suppliers and customers of the Company to issue initiatives to upstream and downstream enterprises in the value chain, and encourage enterprises to account and report to Zijin on their carbon accounting results and follow-up emission reduction plans.

Leading Industrial Technical Cooperation and Breakthrough

As the core direction of energy conservation and emission reduction work by Zijin Mining in the future, we will focus on the current "double high" situation (high energy consumption, high GHG emission) in the industry and the needs around carbon peaking and carbon neutrality technology, fully leverage the organizational role of our new energy and new materials research institute, and conduct in-depth research and analysis of the key technologies of the industry.

Zijin Mining will continue to increase its cooperation and research investment with universities, scientific research institutions and partners in the development of industries related to low-carbon economic transformation and the technology of mining energy conservation and emission reduction, and will actively seek more business partners with leading low-carbon and environmental protection technologies. Focusing on the industrialization layout with mineral supply chain as the core scenario, we will strive to break through the technologies in mining methods, metallurgy process, hydrogen, energy storage technology, CCUS technology, biomass coupling power generation, to contribute to the industry chain.

Maintaining Continual Improvement

Sustainable development through low-carbon footprint

Zijin Mining will continuously improve its management capacity for responding to climate change and implement its action plan on reducing emissions in line with the principles of resources increase, consumption reduction, energy conservation and efficiency enhancement. In the future, we will focus on deepening research and increasing input in the following areas:

Clear and Transparent Data

Through our GHG inventory and third-party authentication, we will strengthen the accuracy and professionalism in the monitoring, accounting and managing of energy consumption and GHG emissions during production. We will identify the carbon footprints at each stage of our operations, thereby reach production optimisation and achieve emission reduction targets. At the same time, we will continue to benchmark with international standards such as GRI, CDP, TCFD etc., maintaining regular and high-quality information disclosure.

Promoting Emission Reduction Mechanism

We will break down and implement our emission reduction plans, carry out proactive emission reduction actions, and establish assessment mechanisms. At the same time, we will continue to study international excellent practices and consider incorporating internal carbon price and carbon asset trading into our management model. We will also establish a Carbon Peaking Intelligent Management Platform to realise production energy control, building energy management, online energy consumption monitoring, interactive intelligent collaborative management, smart office and other functions to achieve “digital intelligent” for carbon asset management, providing strong technical support to upgrade our own and partners’ carbon management capabilities.

Transformation of Energy Conservation and Carbon Reduction

With the global low-carbon transformation gradually unfolding, Zijin Mining’s mines and smelters will certainly shift to clean energy in the future and gradually phase out inefficient and high-emission technologies. We have requested mines and smelters to incorporate carbon planning into business planning. For mines in the investment and acquisition stage as well as design stage, we will consider climate change physical risks of their external environment. In the design stage, we will make renewable energy as the main energy source of future production and employ efficient process to meet Zijin's overall carbon reduction plan. Please see **Carbon Reduction Measures** for specific emission reduction measures and routes.

LOW-CARBON TRANSITION PATHWAY

By taking ownership of our low-carbon transition pathway, we hope this could encourage the transformation of the whole industry into a low-carbon economy. Zijin Mining strives to advance energy-saving and emission-reduction technologies, and reach carbon peak by 2029 and carbon neutrality by 2050. We will follow strategies that are backed by science and in line with our actual production situation. Together with our partners, we will witness a cleaner and lower carbon future.

Goal and Commitment

We support the global low-carbon transition by setting short-term, medium-term, and long-term goals for carbon peaking and carbon neutrality.

Short-term target

by 2029

Actively adopt GHG emission reduction measures to achieve carbon peak and gradually build Scope 3 emissions accounting, monitoring and management system.

Medium-term target

by 2030~2045

Deepen carbon emission reduction technologies such as hydrogen, electrification, new energy, and heat pumps to achieve year-on-year reduction of GHG emissions after reaching the peak.

Long-term target

by 2046~2050

Increase the proportion and efficiency of various proactive emission reduction measures, and combine long-term technical measures and financial instruments such as carbon sinks, carbon capture and utilization storage, and carbon trading to achieve carbon neutrality.

Specific objectives include

- By **2029**, reach Carbon Emission Peak
- By **2050**, achieve Carbon Neutrality
- Define the action roadmap towards the carbon peak and carbon neutrality target and develop a series of feasible strategies and initiatives to ensure it is in line with the **IEA 2°C** pathway.
- Respond positively to the UN Sustainable Development Goals, follow the Responsible Gold Mining Principles, and commit to disclosing climate information using the **TCFD** recommended framework.
- Establish a joint Board of Directors, Strategy and Sustainability (ESG) Committee and implement a peak carbon and carbon neutrality management system
- By **2030**, Commit to optimising the energy mix structure, with the use of Renewable Energy accounting for more than **30%**
- Commit to a gradual reduction in GHG emission intensity (with 2020 as the base year)
  - o By **2025**, reduce GHG emissions per unit of industrial value added by ↓ **20%**
  - o By **2029**, reduce GHG emissions per unit of industrial value added by ↓ **38%**

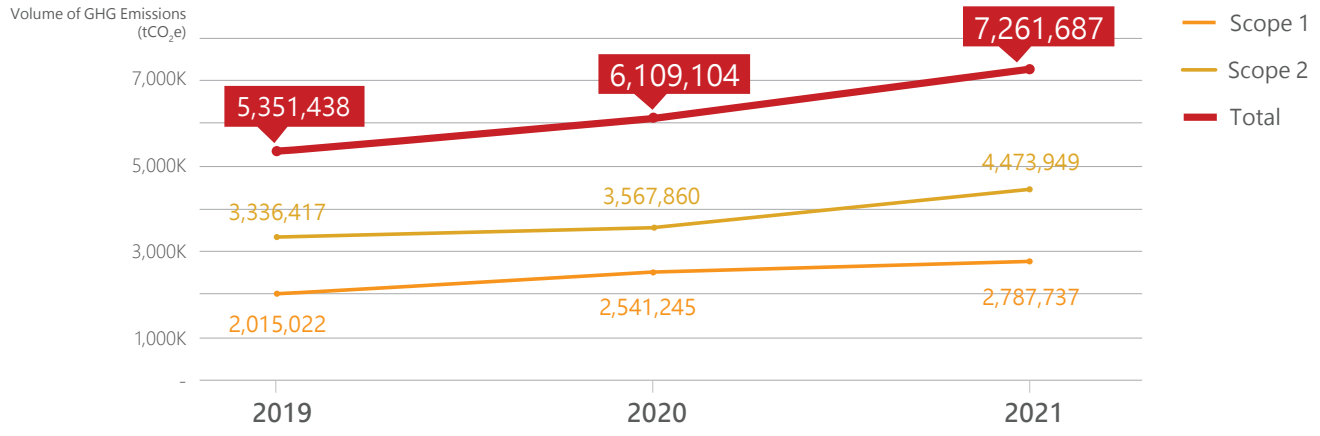
Current GHG Emissions Performance

Scope 1 & 2 Emissions

We take a proactive approach to identifying, accounting for and managing our energy consumption and GHG emissions. We seek opportunities to achieve GHG reductions in multiple directions and areas, and establish ambitious yet certainly achievable targets to guide Zijin Mining's long-term low-carbon development path.

Zijin Mining continues to track and report our global GHG emissions, as shown in Figure 8. In 2021, our combined Scope 1 and Scope 2 emissions were 7,261,687 tonnes of carbon dioxide equivalent (tCO_2e). The year-on-year increase was primarily attributable to increased production of metal products compared to 2020. However, the GHG emissions per unit of industrial added value dropped by 3% compared with 2020. Our Scope 1 emissions consist of primary energy produced and consumed directly by our global operations, mainly from diesel consumption by mobile mining equipment. Our Scope 2 emissions are from secondary energy consumed by our global operations, primarily from electricity purchased from the power grids of the countries where our assets are located.

Figure 8 Zijin Mining Historical GHG Emissions



Scope 3 Emissions

Under the premise of striving to achieve Scope 1 and Scope 2 GHG emissions peaking in 2029 and carbon neutral in 2050, we maintain a long-term consideration on our Scope 3 emissions and keep good communication with downstream customers, jointly promoting the interchange of GHG emissions data, and start building a Scope 3 emission data accounting, monitoring, and management system, incorporating it into the Company's GHG emission management system.

Low Carbon Transition Pathway

Background and Methodology of Scenario Analysis for Scope 1 and 2 Emissions

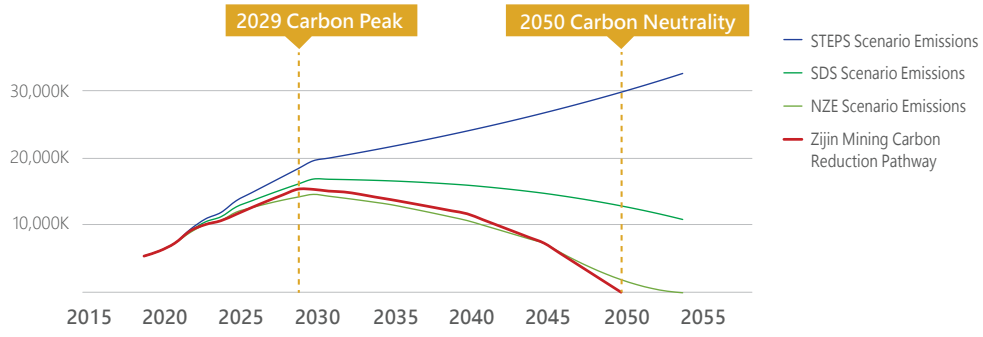
A TCFD-aligned scenario analysis requires the application of multiple scenarios representing different global warming effects, including a 2°C warming or less. The IEA's Stated Policies Scenario (STEPS), Sustainable Development Scenario (SDS) and Net Zero Emission (NZE) scenarios were selected to estimate GHG emissions from Zijin Mining's operations worldwide. The IEA believes that, against the backdrop of global joint efforts to achieve the Paris Agreement goals, the demand for various rare metals will steadily increase with the growth and development of the new energy industry. Based on Zijin Mining's reasonable expectations of changes in its own business, the development of the new energy industry in a low-carbon scenario will be more beneficial to our business.

With stronger consideration in 2020, Zijin Mining identified climate change as an important issue and began to establish a GHG accounting system. While entering the second decade of the 21st century, it also marked the start of the first phase of our strategic development plan. We choose 2020 as the baseline year for emission reduction as it is consistent with the Company's overall strategic plan.

We analyze the Company's global asset GHG emissions and emission reduction roadmap based on the following scenarios:

- **IEA forecasted scenarios:** Adopting Zijin Mining's future production forecast to the IEA scenarios (STEPS, SDS, NZE). Under the STEPS scenario, GHG emissions will continue to rise until 2050 due to the rising demand for renewable energy-related rare metal products in the Company's downstream market and if no related intervention measures are taken. Under the SDS and NZE scenarios, GHG emissions will roughly peak in 2030 and begin to decline gradually, taking into account the future changes in the global share of clean energy and the application of carbon capture technologies. Under the NZE scenario, carbon neutrality will be achieved around 2054.
- **Zijin Mining's Low-carbon Transition Pathway:** Our mineral production under the IEA scenarios have a positive outlook. Our assets are located in China, Kyrgyzstan, Colombia, Russia and Australia which all have issued national carbon neutrality targets. Thus, it is expected that by 2050-2060, each country will have a significantly greater share of renewable energy in its total energy mix. With the combination of national emission reduction targets where our assets are located and Zijin Mining's own emission reduction efforts, we plan to establish more ambitious emission reduction targets and accelerate towards achieving carbon neutrality or net zero targets by 2050 that follows a lower emission reduction path than IEA's 2°C projected trajectory.

Figure 9 Estimated Low Carbon Transition Pathway, 2022-2050



According to the above forecast analysis, our emission reduction path will be divided into three stages:

Short-term

During the peak period of GHG emissions from 2023 to 2029, while our business scale continues to expand, we will implement emission reduction measures mainly focused on clean fuel replacement, higher electrification ratio and clean energy substitution (***Figure 10***). Taking 2020 as the base year, the increase of GHG emissions per unit industrial value will reduce by 20% in 2025; and by 38% in 2029 thus reaching a carbon peak.

Medium-term

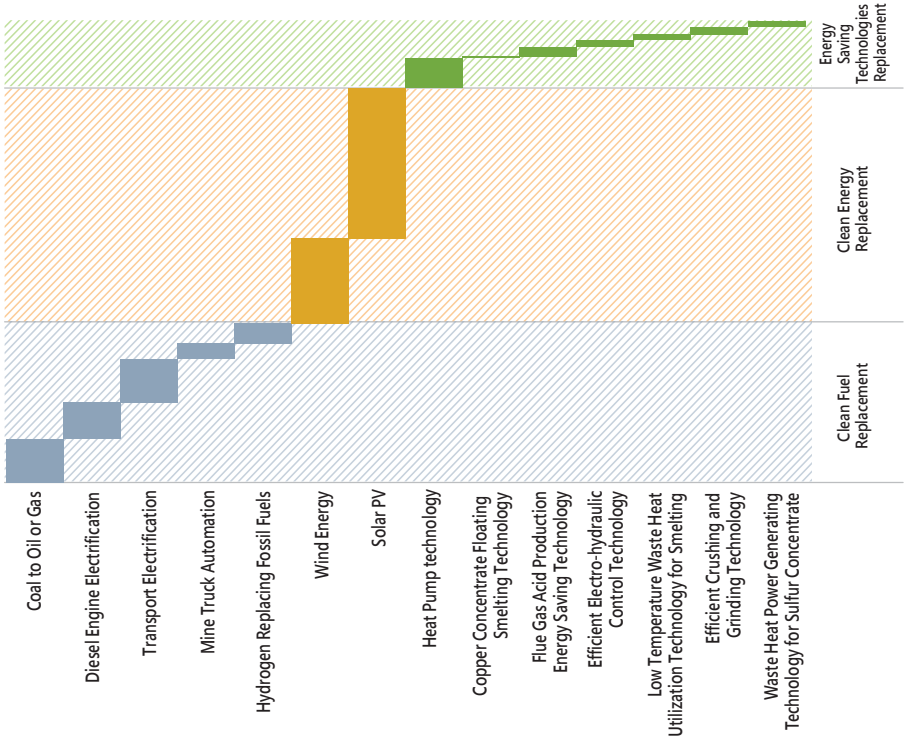
2030-2045 GHG rapid emission reduction phase, we will take 2029 as the base year to implement the emission reduction plan. We shall continue to deepen the upgrading of various emission reduction technical measures, increase efficiency and self-reliance on process improvement, as well as other renewable energy management processes, thus achieving year-on-year reduction in the Company's GHG emissions after carbon peak, staying below the 2°C pathway scenario.

Long-term

In the carbon neutrality phase from 2046 to 2050, we will strive to achieve carbon neutrality by 2050. With the widespread implementation of clean energy, we will strengthen the application of carbon capture and storage technologies and achieve neutrality through ecological carbon sinks, carbon trading and other measures.

According to incomplete statistics, GHG emissions from the downstream mining industry account for more than 90% of the GHG emissions of the whole value chain, which is our Scope 3 emissions. We will strive to take on the responsibilities of an international company in the mining industry and strive to work with our customers to raise awareness of GHG emission management across the whole mining value chain , guiding the whole value chain towards low carbon development. We will actively digitalise and establish multi-party collaborations to improve our collection and analysis of downstream GHG emission data. In the long term, we aim to support GHG emission reduction in the whole value chain, actively embrace new opportunities and challenges during the emission reduction pathway, and achieve mutual benefits and win-win situation with our partners.

Figure 10 Carbon Emissions Reduction Initiatives to reach Carbon Peak



Carbon Reduction Measures

Towards the era of low-carbon transition, we will extensively collaborate with internal and external stakeholders and achieve emission reduction through clean fuel substitution, clean energy substitution, energy-saving technology implementation, carbon offset, and carbon trading.

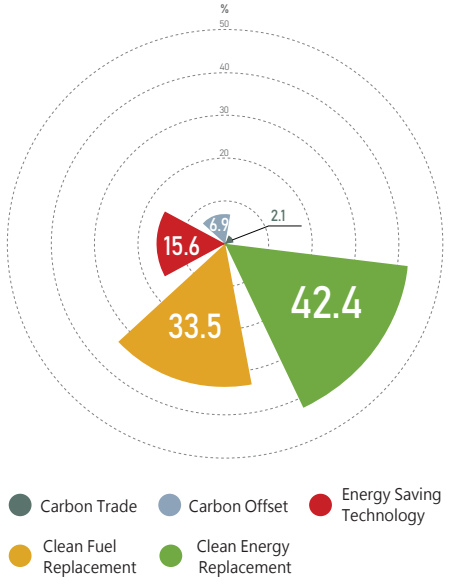
Our principles are: direct emission reduction is better than carbon offset, carbon offset is better than carbon transaction. We implement carbon reduction measures according to the proportions from high to low, following the order of clean energy substitution, clean fuel substitution, energy-saving and emission-reducing technology replacement, carbon offsetting, and carbon trading.

Our Scope 1 emissions mainly come from the use of fossil fuels, with coal (coal, bituminous coal, anthracite, coke, brown coal, etc.), oil (diesel oil, gasoline, kerosene, heavy oil, etc.) and gas (liquefied natural gas, liquefied petroleum gas, natural gas,etc.) being the primary sources of carbon emissions.

We will continue to adopt measures such as coal to oil or gas, diesel engine electrification, transport vehicle electrification, mine transport vehicle unmanned, hydrogen energy replacing our fossil fuels, and gradually reduce Scope 1 emissions.

We will continue to promote the use of energy-saving technologies, including wind power, photovoltaic, hydropower, heat pump technology, copper concentrate spin-floating smelting technology, flue gas acid production energy-saving technology, efficient energy-saving electrohydraulic control integration technology, low-temperature waste heat utilization technology in smelting, highly effective crushing and grinding technology, waste heat power generating technology for sulfur concentrate, permanent magnet motor promotion, etc., thus gradually reducing our Scope 2 emissions.

Figure 11 Implementation of carbon emission reduction measures



During the carbon peaking period from 2023 to 2029, we will focus on the promotion and application of emission reduction measures. In the rapid decline of carbon emissions from 2030 to 2045, we will achieve the large-scale application of zero-carbon technologies and widespread demonstrations of negative carbon technologies. Following the national trajectory, in the period reaching carbon neutrality from 2046 to 2050, negative carbon technologies will be applied on a large scale, and we will focus on building carbon sinks and actively prepare for the research and development of innovative negative carbon technology.

Clean Energy Measures

The greening of electricity is vital for carbon neutrality, and therefore using electricity from renewable energy sources is our key method to offset current electricity consumption. In 2020, we started to deploy renewable energy and established Zijin Environmental Protection Technology Co., Ltd. We also closely cooperated with Fujian Longjing Environmental Protection Co., Ltd. in the field of clean energy, and further enhanced Longjing's advantages in the construction and operation management of EPC projects, electric control technology, inverter equipment manufacturing, and more. We are engaged in the investment and operation of renewable energy projects such as solar photovoltaic power generation and wind power generation, as well as equipment manufacturing, sales, and related technical services in the hydrogen energy field.

Solar Power Generation

Since 2021, we have put solar photovoltaic power generation projects in mines and smelting assets, including Zijinshan Gold and Copper Mine, Heilongjiang Duobaoshan Copper Industry Inc., Longnan Zijin Mining Co., Ltd., Shanxi Zijin Mining Co., Ltd., Tibet Julong Copper Co., Ltd., Heilongjiang Zijin Copper Co., Ltd., Jilin Zijin Copper Co., Ltd. and all smelting and processing assets in Fujian, with an installed capacity of approximately 53 MW. In the future, we will continue taking into consideration local conditions, various types of land development, and integrate comprehensive development of large-scale photovoltaic power, hydropower and wind power generation. We will promote local and near-site photovoltaic power generation, clusters of offshore wind power turbines, promoting the integrated development of renewable energy utilization and revitalization of people's livelihoods. By 2029, we will build at least 800 MW photovoltaic power stations and increase our capacity to a cumulative total of minimum 2,500 MW by 2050.

Wind Power Technology

To strengthen our development in wind power, we have reached a strategic cooperation agreement with Xinjiang Goldwind Science & Technology Co., Ltd. We will be able to leverage on Goldwind's leading "source-grid-load-storage integration" technological innovation capabilities in the new energy field and carry out innovative electric power production and business model design specific to each mining area, achieving intensive synergies in sourcing, grid, load and storage. By 2029, no less than 500 MW of self-use wind power plants will be built and our capacity will increase to a minimum of 1,300 MW by 2050. While wind power generation capacity increases in the context of carbon neutrality, Zijin mining will explore developing offshore wind power resources to couple it with hydrogen energy system.

Hydropower Technology

Hydropower is recognised by many countries and regions in the world as an important natural and strategic economic resource. As a form of renewable energy, it is clean and low carbon, provides an alternative to thermal power and nuclear power, facilitates peak shaving, promotes safe operation of the power grid, and improves water resource utilization efficiency without changing water quality, achieving zero pollutant emissions. Currently, the Company owns Zijin Hydropower Plant, Fujian Shanghang Jinshan Hydropower Co., Ltd., Fujian Shanghang Zijin Hydropower Co., Ltd., Fujian Wuping Zijin Hydropower Co., Ltd., Fujian Shanghang Ting River Hydropower Co., Ltd. (including Huilong Power Station, Shizhen Power Station, Shuangxi Power Station), among other hydropower stations. In the next few years, we will try to convert more hydropower plants for self-use or directly source renewable energy to increase the proportion of clean energy in our overall energy mix.

Hydrogen Energy Technology

Hydrogen energy has characteristics such as high energy density, high calorific value, abundant reserves, wide-ranging sources, and high conversion efficiency. It is a clean secondary energy source, which can be used as an efficient energy storage carrier. It is regarded as one of the key energy sources for carbon neutrality. At present, we have successfully developed the first domestic ammonia-hydrogen fuel power plant in China and put it into use.[7] Along with the gradual maturity of hydrogen energy technology, we will gradually carry out our hydrogen energy utilisation plan in 2025-2029.

7 https://www.zjky.cn/news/news-detail-119494.htm

Clean Fuel Substitution

The terminal equipment requires electrification in order to achieve targets of carbon peak and neutrality. Carbon dioxide emission from fossil fuels accounts for about 88% of the total carbon emissions of the whole society. Besides adopting new energy generation measures such as wind power and solar energy on the supply side, it is also necessary to adopt electric power and natural gas as much as possible to replace coal on the consumption -side . For example, electric equipment with a high degree of automation and flexible control is widely popularized, including electric blower, air compressor, excavator, hammer, crusher, drilling and other auxiliary electric power devices. Furthermore, thermal storage electric boiler, high-temperature steam heat pump, industrial electric kiln, rail locomotives, electric heavy trucks, belt corridors and other industrial transportation equipment, hot water steam and other heat treatment devices will be needed.

Implement coal-to-oil, coal-to-gas, and coal-to-electricity measures

The implementation of "coal to oil" is mainly based on the use of environmentally friendly fuel oil, which is a liquid fuel with a low calorific value more than twice that of coal. It not only addresses the production capacity problems of high-pollution coal, but also significantly reduce GHG emissions; "Coal to gas" mainly uses natural gas as a substitute. As one of the clean fossil fuels, natural gas emits nearly 50% less GHG than coal. "Coal to electricity" effectively reduces pollutant emissions and achieves energy conservation and consumption reduction by mainly replacing fossil fuels with clean energy sources. We plan to change the coal consumption of no less than 420,000 tons to oil, gas or electricity between 2023 and 2029, and change the remaining coal between 2030 and 2050.

Diesel Engine Electrification

Fuel excavators, loaders, heavy forklifts, etc. are commonly used heavy energy consumption equipment in mining industries. By transforming the engine into a motor-driven hydraulic pump, the energy consumption can be significantly reduced. Compared to fuel excavators, the carbon emissions can be reduced by at least 50%. We plan to complete no less than 180,000 tons of CO_2e emission reduction by 2029.

Electric Transport Vehicle

Locomotive transportation is the main mode of transport in mines at present. A medium-sized mining vehicle consumes about 80,000 litres of diesel annually, generating about 400 tons of CO_2e per year. With technological breakthroughs from companies such as BYD/Henan Yueyue, pure electric mining trucks have gradually entered the mines and replaced the existing diesel transport vehicles. Tibet Julong Copper Co., Ltd., a subsidiary of Zijin, has actively introduced nearly 40 pure electric mining trucks, equipped with long-distance downhill backflow charging technology, reducing the large amount of carbon emissions caused by transporting ore and burning diesel. In addition, Luoyang Kunyu Mining Co., Ltd., Longnan Zijin Mining Co., Ltd. and Xinjiang Jinbao Mining Co., Ltd., have all carried out the trial operation of pure electric mining trucks. We plan to complete the electrification of at least 550 mining vehicles between 2022-2029. In addition to transport vehicles, we will gradually promote the electrification of official vehicles and commuting vehicles, as well as the iterative conversion of logistics vehicles, sprinkler vehicles and transportation vehicles in specific areas such as the factory, port and park.

Replacement and Application of Key Industrial Energy Saving Technology

The innovation and application of low-carbon technology are crucial means to realise the low-carbon development in the nonferrous metals industry. We will speed up the pace of transformative technological innovation, exploit and recover previously unavailable resources in a safer, more efficient, greener, and sustainable manner, enhance the capacity for high-quality development, and concentrate on innovation and research and development of core technologies, and strengthen the building of relevant patent pools for the formation, development and application of future technologies.

Large-Scale Caving Mining Technology

Caving mining, as a low-cost, large-scale, and high-efficiency mining method, is the only underground mining technology that can compete with open-pit mining in terms of economic efficiency. It uses natural stress as the main load to achieve rock collapse and ore falling. However, natural caving method has high technical requirements for ore rocks and strict mining conditions and management levels are required for its application. Compared to general underground mining methods, natural caving mining requires rock blasting only for drawing the bottom and forming the bottom structure, while the rest of the ore rock does not require blasting, thus greatly reducing explosive consumption and excavation work. We will accelerate the research on the feasibility of natural caving mining in the Serbia Jama and Ruijita lower ore belt porphyry copper mines, Fujian Zijinshan Luobilin porphyry copper-molybdenum mines, and Heilongjiang Copper porphyry copper-molybdenum mines. Our goal is to achieve substantial breakthroughs in natural caving technology, enabling large-scale, low-cost, and highly efficient development, and further enhancing the Company's copper supply capabilities.

Alternative for Explosive Mining Technology

With the influence of policy environment, the static blasting technology has gradually replaced the traditional explosive blasting and become a new mining technology, which can not only reduce the GHG generated during blasting, but also greatly improve mining safety. Currently, static rock blasting technology products in the market include expansion agent, hydraulic splitting rod, splitter, hydraulic impact hammer, etc. In addition, the use of mechanical tunnelling, mechanical rock drilling, high-pressure water jet rock-breaking, laser rock-breaking and plasma rock-breaking tunnelling and mining technology can replace traditional blasting technology, realising blasting effects similar to explosives, and achieving clean mining. We will accelerate the application of new products and mining technologies in underground mines to achieve safe, energy-saving, environmentally friendly and green mining.

Integrated Mining and Processing Technology

Integrated mining and processing technology refers to the use of pre-selection and tailings disposal technology underground. Before lifting the ore to the surface, pre-selection and pre-enrichment are carried out underground to remove most of the waste rock, which can significantly reduce the amount of ore lifted and waste rock discharged on the surface. Slurry transportation technology is suitable for deep mining. After the ore is pre-selected underground, it is crushed and ground into slurry, and then transported to the surface beneficiation plant through pipelines. Alternatively, the beneficiation plant can be built underground, and the concentrate can be directly transported to the surface after underground beneficiation, while waste rock and tailings can be used for backfilling in the mined-out areas, achieving on-site utilisation, and saving land acquisition and tailings management costs. It also eliminates the root causes of various natural disasters caused by tailings dam storage and is an important measure for the green and efficient development of mineral resources with comprehensive benefits.

Unmanned and Intelligent Transportation Vehicles

Explore the application of 5G technology in the field of unmanned mining, and upgrade existing intelligent mining equipment based on 5G networks. Optimise and design the system based on the relevant theories and methods of smart mines and software engineering, and add remote simulated driving cockpit function for unmanned electric vehicles, unmanned electric vehicle convoy operation, and remote control of excavators. Combined with the intelligent control platform for open-pit mines under cloud services, the vehicles are intelligently dispatched, and the efficiency of vehicle and shovel operations are optimised. Currently, Julong Copper Industry in Tibet has built a truck dispatch system in the open-pit mining area, which reduces GHG emissions by reasonably planning driving routes. The company has invested CNY 160 millions to purchase three mining trucks, one electric shovel, one drilling rig, one bulldozer, one loader, and supporting telecom base station construction, and is exploring the applicability of unmanned driving technology in high-altitude areas.

Dry Beneficiation Technology

The advancement and improvement in mineral processing technology and methods can greatly enhance mineral productivity and reduce energy consumption during the beneficiation process. Dry beneficiation technology is a method of beneficiation and separation of materials without adding water, such as air separation in electrostatic beneficiation and gravity separation. Currently, dry beneficiation is widely used in coal mine separation process, and is also being used in iron ore separation, pre-tailing and even gold ore separation. Vale, through its truckless system and dry beneficiation, will reduce GHG emissions by at least 50%. We will continue to explore the application of this technology in non-ferrous metal beneficiation. Because it does not require water in the beneficiation process, this technology can not only reduce water resource consumption, but also greatly reduce energy consumption and GHG emissions.

One-step Smelting Technology for Copper Concentrate

In the pyrometallurgical copper smelting process, except for a very small amount of special copper concentrates with high copper and low iron, common copper concentrates need to go through two processes of smelting and converting to produce crude copper, which is also the most widely used method in the world today. "One-step copper smelting" is to combine smelting and converting into one step, and directly produce crude copper from common copper concentrates.

At present, the flotation smelting technology has achieved the effect of short-process one-step smelting. By using the "inner feeding and outer blowing" feeding method, the principle of the extremely strong diffusion and suction ability of tornadoes in nature when they rotate at high speeds is simulated for the dispersion of materials. The particle flow of the material particles in the form of an inverted tornado is distributed in the center of the reaction tower, and the central pulsation is added in the tornado fluid to change the movement of the material particles, realising the strengthening of particle pulsation collision, mass and heat transfer, and chemical reaction. This process can achieve a smelting furnace operation rate of 98%, a converting furnace operation rate of 97%, and reduce the comprehensive energy consumption of crude copper to 150 kgce/t.

Energy Saving and Emission Reduction Technology for Acid produced from Copper Smelting Process

Acid production is one of the processes with the highest energy consumption in copper smelting. At present, the average energy consumption of acid production is about 90-110 kWh/t sulfuric acid, equivalent to about 86-106 kgce/t anode copper, accounting for about 30% of the total energy consumption in copper smelting process. With the application of advanced processes such as the double-flash process and the increase of oxygen concentration, the amount of smelting and blowing flue gas are small and the SO_2 concentration is high, flue gas volume and concentration are stable, which greatly reduces the energy consumption of flue gas transportation fans, creating conditions for the application of high-concentration SO_2 conversion acid production technology and the comprehensive recovery of acid production waste heat, while the energy consumption level of the acid production system is greatly reduced. In addition, if the "3+1" secondary conversion process is adopted, and imported catalysts are used, while a hot pipe boiler installed at the inlet of each of the first and second absorption towers, the sulfuric acid power consumption index will be further reduced.

Technologies for the Utilization of Low and Medium Level Residual Heat in Copper, Lead and Zinc Pyrometallurgical Processes

At present, the application of waste heat recovery in smelting industries is relatively mature, mainly for power generation, charging steam drying, etc. The amount of steam (2.0-5.4 MPa) produced by the recovery of all waste heat of copper smelting is about 2 t/t of anode copper, equivalent to 210 kgce/t of anode copper. Among which, the waste heat of anode furnace accounts for about 10% of the waste heat of smelting flue gas, the waste heat of acid making accounts for about 20% of the total waste heat of acid making, and the waste heat of low temperature level of acid production accounts for about 25% of the total waste heat during acid production process. In the future, we will consider the use of an efficient magnetically suspended organic Rankine cycle (ORC) generator set to recover the waste heat from the low-temperature flue gas for power generation. ORC is different from the traditional waste heat power generation system which uses water as circulating working medium, and adopts the technical concept of magnetic suspension and permanent magnet to realise the electromechanical integration. It can realise the circulation of low-grade waste heat under 250°C, greatly reduce the waste of waste heat resources, and can also convert low-grade waste heat resources into high-quality electric energy, which is beneficial to the long-distance transmission and secondary utilisation of energy traditional energy consumption, reducing GHG emissions.

At present, our subsidiaries Zijin Copper Co., Ltd. and Heilongjiang Zijin Copper Co., Ltd. are building low-temperature waste heat recovery projects and are expected to reduce GHG emissions by approximately 160,000 tons/year upon completion.

Highly Effective and Energy-Saving Electro-hydraulic Control Integrated Technology for Copper and Zinc Nonferrous Metals

To optimise the integration of key technology and equipment system in electrolytic refining process , the integrated control technology of non-ferrous metallurgy high-efficiency and energy-saving electro-hydraulic control is adopted, such as virtual prototype, semi-physical simulation and electro-hydraulic proportional servo control. The integrated control technology realises the large-scale, high-speed, continuous, automation and energy-saving of the series equipment, reduces the energy consumption while improving the efficiency of electrolysis, and achieves the goal of high-efficiency and energy-saving.

Highly Effective Crushing Process Control System and Crushing Technology

In the ore processing process, the crushing process (including crushing and grinding) is currently the largest single energy-consuming process, accounting for more than 25% of total consumption in the mine. Taking copper as an example, the energy consumption of the crushing process in the ore processing process accounts for as high as 36%. With the development of high-efficiency crushing equipment and related technologies in the future, on the one hand, the demand for grinding media can be reduced, and on the other hand, advanced crushing process control systems and crushing technologies can greatly improve energy efficiency and reduce carbon emissions. In the next few years, we will gradually upgrade the existing grinding and crushing system to ensure that the grinding machines are working in the optimal state, neither operating at low load and wasting electricity, nor at overloads, thereby ensuring stable and efficient continuous operation of the production process.

Heat Pump Technology

Heat pump technology is a new energy technology that has received much attention worldwide in recent years, which can fully utilize waste low-temperature industrial heat and effectively utilise medium-high temperature waste heat to improve energy utilisation efficiency. Its application in industrial waste heat recovery has high economy and environmental benefits. Urat Houqi Zijin Co., Ltd., a subsidiary of the Company, has used this technology to utilise the waste heat of underground drainage water, tailings slurry water and air compressor cooling water to replace the original coal-fired boiler and provide domestic heating. In the future, the Company will increase the promotion and application of heat pump technology to achieve economies of scale.

Industrial Water Saving Technologies

We will increase the innovation and application of water-saving technology, continuously improve the water circulating system and improve the industrial water reuse rate in terms of management. Measures will include vigorously developing the water circulating system, the series water usage system and the recycling water system, and promoting the steam condensate recovery and reuse technology. In terms of technical aspects, we will continue to reform the production process and water use process, including the adoption of new water-saving technology, non-polluting or low-polluting technology, and the promotion of new and high-efficiency water-saving devices like heat exchange technology and equipment, environment-friendly water-saving cooling tower and other cooling structures, circulating cooling water treatment technology and air cooling technology, etc.

We will also improve the promotion of thermal combination technology of production process, and the use of demineralised water for the supply of the salt-water production process for medium-pressure steam-generating equipment. We will use distillation technologies, dry stripping, deaeration without steam and other technologies that use less or no steam. Therefore, we also optimise the preparation process of boiler water supply and process water, and develop equipment and environmental water-saving washing technology.

Technology for Increasing Carbon Sink and Negative Emissions

It is difficult to achieve a huge amount of carbon elimination by relying on the way of reducing carbon emissions alone, and it is also impossible to reduce the emissions to "zero". Therefore, a series of artificial technologies need to be adopted to increase the elimination and absorption of carbon, that is, to increase the "negative emissions" of carbon. At present, common negative carbon emission technologies include ecological carbon sequestration, CCUS, direct air carbon sequestration (DAC) and carbon recycling. These technologies can solve the GHGs that cannot be reduced by technical means in production activities, and are an important part of the technology portfolio to achieve the goal of carbon neutrality.

Ecological Carbon Sink

Ecological carbon sink management activities such as afforestation, forest management and vegetation restoration in mining areas can achieve good natural carbon sequestration. Before carrying out the carbon sink work, we will gradually establish the ecosystem carbon sink monitoring and accounting system, conduct background surveys and carbon storage assessment, and potential analysis of carbon sinks such as forests, grasslands, wetlands, oceans, soil, frozen soil and other carbon sinks, and implement ecological protection and restoration of carbon sink effectiveness through monitoring and evaluation. We will continue to carry out afforestation and ecological restoration work, lock in forestry carbon sink resources on idle land in mining development and try to use forestry interest subsidies and policy incentives to invest in forestry carbon sink projects with low capital cost. We aim to complete the construction of carbon sink forests of no less than 20,000 tons of CO_2e/year by 2029, in order to essentially meet the Company's annual carbon sink demand during the period from carbon peaking to carbon neutrality.

Carbon Capture Technology

Existing carbon capture technologies can be mainly classified into three categories: carbon dioxide capture, utilization and storage (CCUS), bioenergy with carbon capture and storage (BECCS) and direct air capture (DAC). The cost of carbon capture technology will be the price ceiling of future carbon price. We plan to prepare and deploy industrial flue gas carbon capture technology between 2022 and 2030, and select the best CCUS route (preferably organic amine method) based on different scenarios. Between 2030 and 2035, small and medium-sized CCUS capture technology with lower cost than the existing carbon price will be used for small-scale greenhouse gas capture. From 2036 to 2050, distributed DAC technology will be gradually applied to achieve large-scale carbon emission capture with the widespread use of hydrogen and biomass fuel and terminal electrification.

SAFEGUARDING MEASURES

Our Strategy...

Short Term

The inadequacy of the climate governance system will hamper the implementation of corporate climate transition efforts. In order to cope with global climate issues and corporate transformation, we have been improving our own carbon management system and laying out renewable energy and new materials industries. Nevertheless, the lack of relevant management personnel and the shortage of talents in key industries have made the tasks of managing carbon assets, managing climate-related data and building new energy and material industries more challenging.

We will:

- Cultivate a group of globally competitive carbon management and emission reduction talents,
- Reform our global operation and environmental, social and governance (ESG) management system, and include a mechanism for monitoring, reporting and verification of GHG emissions, and
- Improve quality of information for public disclosure.

Medium Term

With the significant decline in ore grades and the large-scale development of low-grade mines, the difficulty of ore mining and selection will greatly increase, posing enormous challenges for future emission reduction efforts.

We will:

- Seek more opportunities for mergers and acquisitions of high-quality medium and large mining assets,
- Further increase reserves of important mineral resources and new energy minerals to mitigate the risks of declining grades, rising costs and growing GHG emissions, and
- Improve technological research in mining, processing and metallurgy to overcome the risks arising from changes in raw ores.

Long Term

Technological barriers, fluctuations in international commodity prices and operating costs will limit long-term emission reduction and affect the profitability of the enterprise. However, more and more enterprises with international influence are beginning to address these challenges and lay out the accounting and management of greenhouse gas emissions across the value chain.

We will:

- Establish a special fund for climate change management, and increase fund support for low-carbon, zero-carbon and carbon-negative technology research and development
- Openly and actively collaborate with various international government departments, research institutions, universities and enterprises on green low-carbon technology, green equipment and green finance towards a win-win outcome.

APPENDIX A: CARBON EMISSIONS ACCOUNTING METHODOLOGY

Scope of Reporting

The scope of carbon emission accounting in this report is the mining, selection and smelting and processing enterprises which are affiliated to Zijin Mining Group Co., Ltd. and have direct operational control rights. The forecast of GHG in this report is also based on the above business scope, excluding other service, consulting, exploration and other business types.

Greenhouse Gas Accounting Method

The greenhouse gas accounting shall be based on ISO 14064-1:2018 Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals, The Greenhouse Gas Protocol: A Corporate Reporting and Reporting Standard, General Guideline for the Greenhouse Gas Emission Accounting and Reporting for Industrial Enterprises (GB/T 32150-2015). The industry greenhouse gas emission accounting methods and reporting guidelines and electricity emission factors reference local grid carbon emission factor standards. The greenhouse gas emission from unit industrial added value refers to the greenhouse gas emission generated by the added value part of the enterprise in the production process. Industrial VAT shall be calculated under the income method (i.e. industrial VAT = depreciation of fixed assets + remuneration of workers + net production tax + operating surplus) and calculated at the annual average metal price for 2020.

GHG Accounting Scope

This GHG accounting is GHG emissions from Scope 1 and Scope 2 within organizational and reporting boundaries. The accounting boundaries include greenhouse gas emissions from all production sites and production facilities under the control of enterprise operations. The scope of facilities includes direct production systems, auxiliary production systems and subsidiary production systems. Among them, the direct production system includes mining, mineral selection, processing, smelting and other production activities. The auxiliary production system includes ventilation system, transportation system, drainage system, power supply, water supply, heating, refrigeration, machine repair, laboratory test, instrument, warehouse (raw material yard). The subsidiary production system includes production command management system (factory department), and production service departments and units (such as staff canteen, workshop) in the factory area.

Table 7 Greenhouse Gas Accounting Scope

Scope	Emission Type	Emission Source
Scope 1: Direct Emission	Fixed Combustion Source	GHG emissions from fuel combustion and diesel engine use in boilers, kilns, internal combustion engines and other combustion equipment
	Moving Combustion Source	GHG emissions from vehicles using diesel fuel, etc.
	Decomposition Reaction	GHG emission from decomposition of carbonate, etc.
Scope 2: Indirect Emission from purchased electricity, steam, heating and cooling consumption	Purchased Electricity	Indirect emissions from production equipment and production auxiliary/household equipment
	Purchased Heat (hot water, steam, etc.)	Production equipment and indirect emissions from drying and heating of production auxiliary/ household equipment

APPENDIX B: TCFD INDEX

TCFD Disclosure Recommendations		Index	
Governance	a) Describe the board's oversight of climate-related risks and opportunities.	Board of Directors	p.9
	b) Describe management's role in assessing and managing climate-related risks and opportunities.	Management Level Implementation Level Monitoring Level	p.9 p.9 p.9
Strategy	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Enhanced Climate Resilience	p.10
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Physical Risk Transition Risk Low-carbon transition and climate strategic deployment	p.11 p.16 p.20
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Physical Risk Transition Risk Carbon Reduction Measures	p.11 p.16 p.28
Risk Management	a) Describe the organization's processes for identifying and assessing climate-related risks.	Risk identification and assessment	p.10
	b) Describe the organization's processes for managing climate-related risks.	Climate Governance Risk Identification and Assessment	p.8 p.10
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Low-carbon transition and climate strategic deployment	p.20
Metrics and Targets	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Physical Risk Transition Risk	p.11 p.16
	b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	Status of emission	p.26
	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Objectives and commitments Transition route planning	p.25 p.26

APPENDIX C: PHYSICAL CLIMATE CHANGE EXPOSURE RATINGS USED TO GENERATE RISK LEVEL SCORES WITHIN CIP

Exposure Rating	Definition
Very High	Exposure to the Climate Hazard is very high. Potential impacts may: - Be long term (possibly permanent), severe and financially significant to operations. - Have extensive social and health implications with national or international reputational impacts. - Affect large areas of the environment over a period of months, impacting high biodiversity areas. It is likely that the entirety of the overall asset would be impacted.
High	Exposure to the Climate Hazard is high. Potential impacts may: - Be long term (months) and financially significant to operations. - Have extensive social and health implications with national or international reputational impacts. - Affect large areas of the environment over a period of months impacting high biodiversity areas. It is likely that a large proportion of the overall asset would be impacted.
Moderate	Exposure to the Climate Hazard is moderate. Potential impacts may: - Be medium term (weeks) and moderately financially significant to operations. - Have minor/medium social and health implications with local reputational impacts. - Affect moderate areas of the environment over a period of weeks, impacting low biodiversity areas. It is likely that a moderate proportion of the overall asset would be impacted.
Low	Exposure to the Climate Hazard is low. Potential impacts may: - Be short term (days) and not financially significant to operations. - Have minimal social and health implications with limited reputational impacts. - Affect small areas of the environment over a short period. It is likely that a small proportion of the overall asset would be impacted.
Minimal	Exposure to the Climate Hazard is minimal with limited potential effects to assets.

APPENDIX D: TRANSITION CLIMATE CHANGE RISK RATING

Risk/Opportunity Level	Description
High Risk	High risk to Zijin Mining and/or its regional businesses which results in a risk of closure or material and permanent disruption to the operations.
Moderate Risk	Moderate risk to Zijin Mining and/or its regional businesses which results in negative impact to operations, financials, reputation and strategy that cause disruption to non-critical activities.
Low Risk	Low risk to Zijin Mining and/or its businesses which results in positive or negative impact to operations, reputation, financials, strategy and result in minor loss(es) of opportunity.
Minimum Risk/Opportunity	Minimum risk/opportunity to Zijin Mining and/or its businesses with minimum impact on operations, reputation, financials, strategy. Business can continue to operate as usual in low carbon economy. No / Insignificant impact to business vision or strategy.
High Opportunity	High opportunity for Zijin Mining business and/or its regional businesses where new business segment created as result, capturing the opportunity in the low carbon economy or a chance to be seen as a leading sustainable and green brand.
Moderate Opportunity	Moderate opportunity captured in the low carbon economy. Some changes are required in certain aspects of the business plan.
Low Opportunity	Low opportunity captured in the low carbon economy. Only minor updates are required to business plan.

Zijin Mining Group Co., Ltd.

Address : Zijin Tower, Zijin Road, Shanghang, Longyan, Fujian Province, China

Telephone : 0597-3998038 Post Code : 364200

Email : zjky@zjky.cn or international@zijinmining.com