

**CLIMATE CHANGE
REPORT 2024**



**PATHWAY
TO NET ZERO**

CONTENTS

01
INTRODUCTION
06

02
GOVERNANCE
14

03
STRATEGY
18

04
RISK MANAGEMENT
28

05
METRICS AND TARGETS
32

06
LOOKING AHEAD
36

MESSAGE FROM ESG COMMITTEE



Mr. Piriya Khempon

Chairman of the Environment,
Social and Governance Committee

On behalf of the ESG Committee, I am pleased to present our Climate Change Report 2024, which reaffirms our unwavering commitment to addressing climate change and driving a sustainable future. As a sub-committee at the Board of Directors level, the ESG Committee plays a crucial role in overseeing climate-related risks and opportunities, ensuring that sustainability is embedded in our business strategy.

The Board of Directors exercises diligent oversight of our climate-related strategies, ensuring that climate change remains a priority integrated into our governance structure. This commitment drives our policies and decisions, fostering resilience and accountability across all levels of the organization.

We affirm our strong commitment to a Just Transition, prioritizing fairness and inclusivity as we advance toward a low-carbon future. Our efforts aim to balance environmental stewardship with social responsibility,

supporting communities and stakeholders throughout this transformative journey.

This year, we announce our ambitious Net Zero target by 2050, alongside interim targets to reduce greenhouse gas emissions by at least 20% by 2030. These milestones reflect our resolve to contribute meaningfully to global climate goals and to drive measurable progress within our operations and value chain.

NONE OF THIS WOULD BE POSSIBLE WITHOUT THE UNWAVERING SUPPORT OF OUR STAKEHOLDERS. YOUR COLLABORATION AND TRUST INSPIRE US TO PUSH FURTHER AND ACHIEVE MORE. THANK YOU FOR YOUR CONTINUED PARTNERSHIP AS WE WORK TOGETHER TO BUILD A SUSTAINABLE AND RESILIENT FUTURE.

Thank you for your trust and partnership.

MESSAGE FROM CEO



As we stand at a pivotal moment in the global challenge against climate change, Banpu is reaffirming our commitment to a more sustainable future. Climate change is not just an environmental challenge, it is a business imperative that demands decisive action, strategic foresight, and collective responsibility.

I am proud to announce a cornerstone of our climate strategy: Net Zero target by 2050. This is a bold yet necessary target, reflecting our dedication to mitigating the impacts of climate change and fostering a resilient, low-carbon world. To ensure measurable progress, we have set interim targets to reduce greenhouse gas emissions by at least 20% by 2030. These commitments are not aspirational ideals, they are actionable imperatives that will guide our operations, investments, and partnerships in the years ahead.

In line with our commitment to transparency and accountability, we are taking significant steps to align with emerging global standards. This year, we have

begun adopting the requirements of IFRS S2—the International Financial Reporting Standard for Climate-related Disclosures. By integrating these standards into our framework, we are not only meeting regulatory expectations but also setting a higher benchmark for ourselves in managing climate-related risks and opportunities.

Recognizing the unique challenges and opportunities in the regions where we operate, we are enhancing our climate scenario analysis to align with the Nationally Determined Contributions (NDCs) of each country. This tailored, region-specific strategy ensures that our efforts are both globally cohesive and locally relevant, enabling us to anticipate and adapt to diverse climate realities. Simultaneously, we are undertaking a comprehensive re-assessment of climate-related risks and opportunities at the site level. By examining the unique conditions of each operational location, we aim to fortify our resilience, unlock new possibilities for innovation, and safeguard the communities and ecosystems we serve.

The journey ahead will demand collaboration. I am inspired by the dedication and passion of our employees, as well as the collective strength of our partners and stakeholders who share our vision for a sustainable tomorrow. Together, we are not just responding to the climate crisis—we are shaping it. Let us continue to push boundaries, challenge the status quo, and lead with purpose. This Climate Change Report 2024 is our pledge to act decisively, to lead purposefully, and to contribute meaningfully to a world where future generations can thrive.

THANK YOU FOR JOINING US ON THIS TRANSFORMATIVE PATH. WE WILL NAVIGATE THE COMPLEXITIES OF THE ENERGY TRANSITION AND CONTINUE TO CREATE LASTING VALUE FOR OUR STAKEHOLDERS.

Sinon Vongkusolkrit
Chief Executive Officer









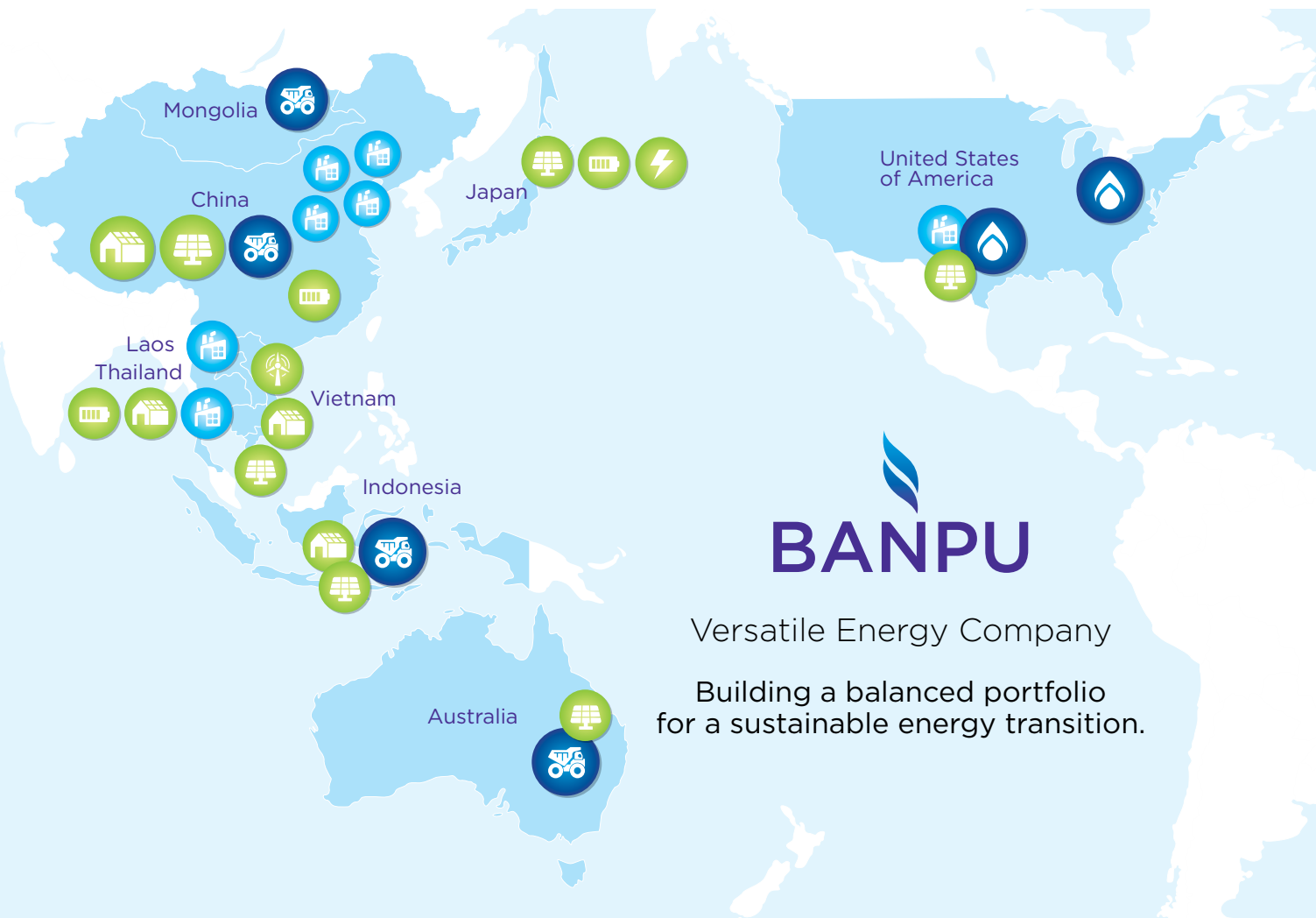
INTRODUCTION

FROM TCFD TO IFRS S2

OVERVIEW: TCFD & IFRS S2

TCFD	IFRS S2
<p>➤ STATUS: No longer in used (since 1 Jan 2024)</p> <p>➤ PURPOSE:</p> <ul style="list-style-type: none">• Encourage companies and financial institutions to disclose climate-related risks and opportunities in their financial filings• Voluntary requirement <p>➤ AUTHORITY: the Financial Stability Board (FSB)</p>	<p>➤ STATUS: In use to replace TCFD</p> <p>➤ PURPOSE:</p> <ul style="list-style-type: none">• Encourage companies to disclose climate-related risks and opportunities• In effective from January 2024• IFRS S2 is in used in accordance with IFRS S1*• Compulsory VS Voluntary depends on local jurisdiction <p>➤ AUTHORITY: The International Sustainability Standards Board (ISSB)</p> <p>➤ COUNTRY ADOPTION Plan to adopted</p> <ul style="list-style-type: none">• Australia - start 1 Jan 2025 (partially adopt)• China - plan to adopt nationwide by 2027• Japan - plan to adopt within 31 March 2025• U.S. - other jurisdictions with related disclosure standards
<small>* IFRS S1 - General Requirements for Disclosure of Sustainability-related Financial Information.</small>	<small>Source: (S&P global, 2024)</small>

Part	IFRS S2 new requirement	Available in Banpu 2023 Climate Change report	Available in Banpu 2024 Climate Change report
 Governance	Related skills and training of Governance body	No	Yes
	Working & monitoring strategy, policy and process. Especially those relevant to climate-related risks & opportunities	No	Yes
	Whether and how related performance metrics are included in remuneration policies, for example climate-related KPI	No	Yes
 Strategy	Identify industry-based physical and transitional risk	Yes	Yes
	Response/plan to respond to risk & opportunity	Yes	Yes
	New criteria for current financial effects	No	Yes
	New criteria for anticipated financial effects & financial planning	No	Yes
 Risk & Opportunity Management	Scenario analysis	Yes	Yes
	How & when scenario analysis is carried out	No	Yes
	Use of climate scenario analysis to inform risk	Yes	Yes
	Risk prioritization and monitoring	Yes	Yes
 Metrics & Targets	Identify, assess, prioritize opportunities	No	Yes
	Integrate opportunity into overall risk management	No	Yes
	Indicator link to SDGs	No	Yes
	Identify metric used to assess climate-related risks and opportunities	No	Yes
	Industry-based metrics	Yes	Yes



Versatile Energy Company

Building a balanced portfolio
for a sustainable energy transition.

ENERGY RESOURCES

Mining
**Robust and
Responsible Miner**



Natural gas
**Closed-loop
Gas-based Energy
Solutions**



ENERGY GENERATION

Thermal Power
**Unique Baseload
Power Portfolio**



Renewable
**Quality Green
Megawatts**



ENERGY TECHNOLOGY

**New S-Curve in
Energy & Beyond**
E-mobility, EMS,
Energy Trading, etc.



**Vertically-integrated
Battery Player**
Battery Production,
BESS Deployment,
Battery Recycling



CVC

Empowering Innovation, Fueling the Future



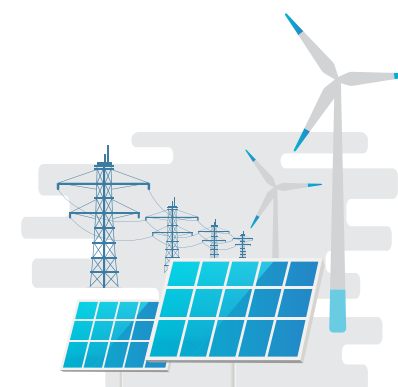
1 ENERGY RESOURCES:

MINING:

A leading player in the mining industry, with mining operations in key markets, including Australia, China, Indonesia, and Mongolia. The company is committed to responsible mining practices, focusing on safety, environmental stewardship, and efficient resource management. By ensuring a stable and reliable supply.

NATURAL GAS:

Through its subsidiary BKV Corporation, Banpu has established a robust natural gas business in the U.S. This business is a critical part of the low-carbon strategy, delivering reliable, lower-emission energy while generating strong cash flow. A key focus is on integrating natural gas production with innovative Carbon Capture, Utilization, and Storage (CCUS) technology, a "closed loop" approach that minimizes emissions and supports the decarbonization efforts.



2 ENERGY GENERATION:

The Energy Generation portfolio comprises thermal power plants and renewables portfolio.

The Thermal power plants ensure a steady and reliable electricity supply, maintaining grid stability and meeting consistent demand. Increasing emphasis is being placed on Gas-fired power generation, which acts as a critical bridge in the transition to cleaner energy, delivering stable, efficient, and lower-emission electricity to support energy security and advance low-carbon strategies.

The renewables portfolio, including solar farms and wind farms, are being strategically developed across the Asia-Pacific region, forming a key component of a balanced and diversified energy mix.

Together, baseload thermal, gas-fired, and renewable energy assets provide a resilient foundation to meet evolving global energy demands while supporting decarbonization goals.



3 ENERGY TECHNOLOGY:

Investments are focused on advancing technologies to support the transition to Net Zero society across 5 key areas to support the evolving energy landscape.

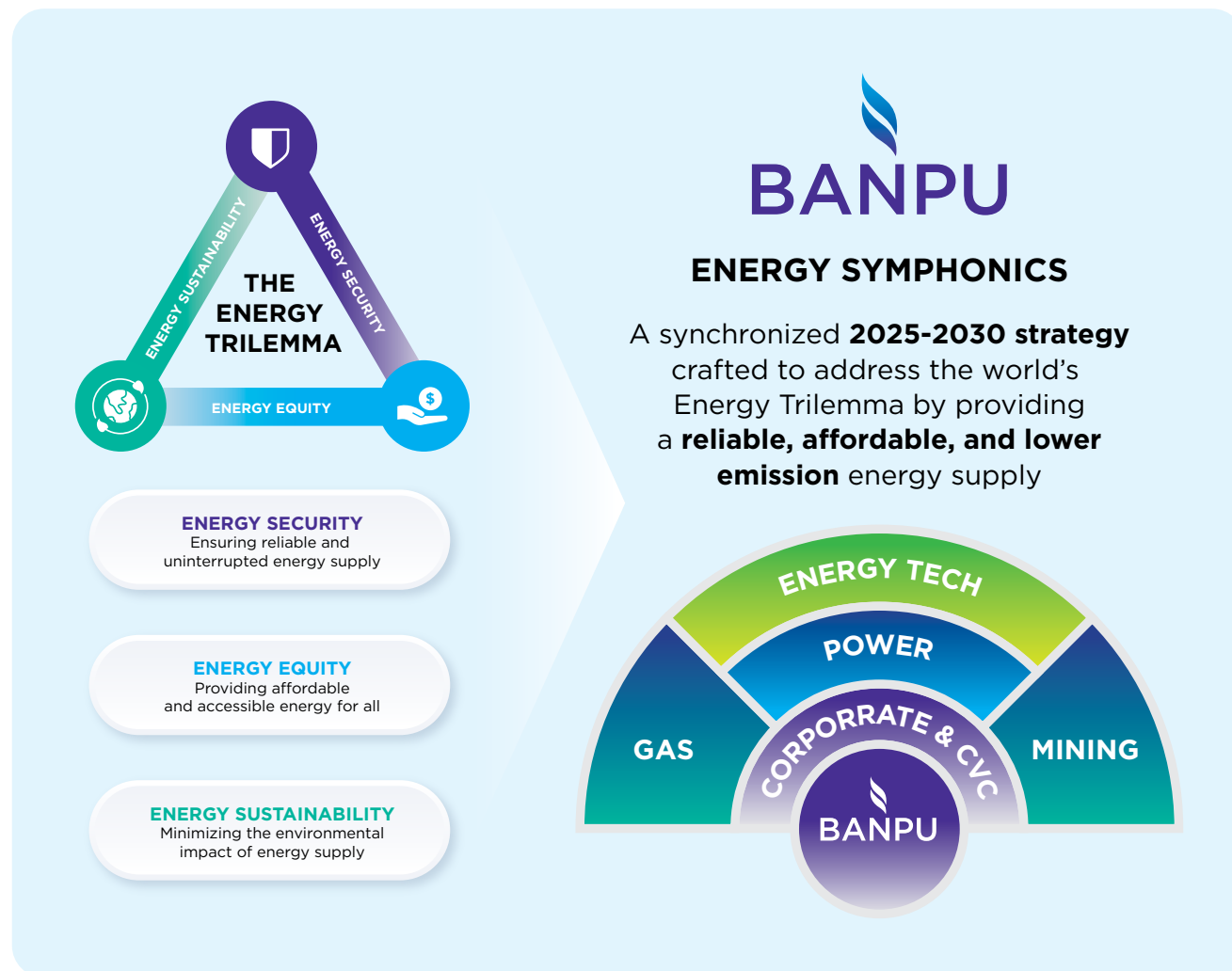
1. Energy trading platform and energy storage project are being developed to enable more efficient and flexible energy management.
2. Solar solutions, including rooftop and floating solar projects, are being expanded to maximize renewable energy generation.
3. Smart cities and energy management systems (EMS) aim to optimize energy use and enhance urban sustainability.
4. The vertically integrated battery business, encompassing battery production, deployment of Battery Energy Storage Systems (BESS), and recycling, supports energy storage and circularity.
5. E-mobility, such as ride-sharing platforms and EV charging infrastructure, are contributing to cleaner and more efficient transportation.

These initiatives collectively drive scalable energy solutions, aligning with Net Zero goals and fostering a sustainable future.

Through the integration of Energy Resources, Energy Generations, and Energy Technology, aimed to emphasize on a sustainable energy transition, addressing the challenges of Energy Trilemma: Energy Security, defined as reliable and consistent energy supply; Energy Equity, ensuring affordable and accessible energy for all; and Energy Sustainability, focused on minimizing environmental impact.

BANPU 2030: ENERGY SYMPHONICS STRATEGY

THE ENERGY TRILEMMA



Banpu has recently announced a new strategic vision for 2030 called “Energy Symphonics,” which aims to drive the company’s transition toward sustainable energy.

This strategy outlines an integrated approach, addressing the increasing global demand for energy while minimizing environmental impact. This strategy aims to address the energy trilemma by establishing new standards for energy that balance reliability, cost-effectiveness, and sustainability.

ENERGY SECURITY:

Ensuring a consistent and reliable energy supply, even amid disruptions. This involves building resilient infrastructure and adopting technologies to maintain stable energy flow for communities and economies.

ENERGY EQUITY:

Committed to making energy affordable and accessible to all. Banpu focuses on fair energy distribution, keeping costs reasonable, and ensuring inclusive access to support socioeconomic growth.

ENERGY SUSTAINABILITY:


Minimizing environmental impact on energy supply through cleaner energy technologies and responsible resource management, aims to lower carbon emissions, invest in decarbonization-focused business.

The “Energy Symphonics” strategy aims for long-term value for shareholders while considering stakeholders and the environment, putting the company at the heart of the global energy transition. This vision is built around 4 core strategic areas consists of.



DECARBONIZATION:

The strategy commits to achieving Net Zero emissions by 2050, with interim targets to reduce greenhouse gas emissions by at least 20% and ensure non-coal-related earnings contribute over 50% of consolidated EBITDA by 2030. This shift reflects a focus on cleaner energy sources, including natural gas, renewables, and energy-related services, supported by innovations like Carbon Capture, Utilization, and Storage (CCUS) and sustainable practices. The approach aims to balance environmental responsibility with long-term business growth.



GAS-POWER-CCUS:

The “Winning Formula” strategy combines natural gas production, gas-fired power generation, and advanced CCUS technology to deliver reliable, low-carbon energy solutions and ensure sustainable cash flow.

Natural gas production serves as a cleaner alternative to fossil fuels, offering lower emissions and complementing the transition to renewable energy. Gas-fired power generation is crucial for providing stable, efficient baseload electricity with lower emissions, bridging the gap between current energy needs and renewable goals. While CCUS enhances environmental performance by capturing and storing carbon emissions, reducing carbon footprints and aligning with decarbonization objectives.

The company introduces Carbon Sequestered Gas (CSG) products using captured carbon to create valuable energy opportunities while addressing the growing demand for low-carbon energy solutions and supporting new revenue streams. The integration of gas production, power generation, and CCUS creates a scalable model that meets present energy needs while capturing opportunities in the evolving energy landscape and reinforcing commitment to sustainable growth and decarbonization.



RENEWABLES+:

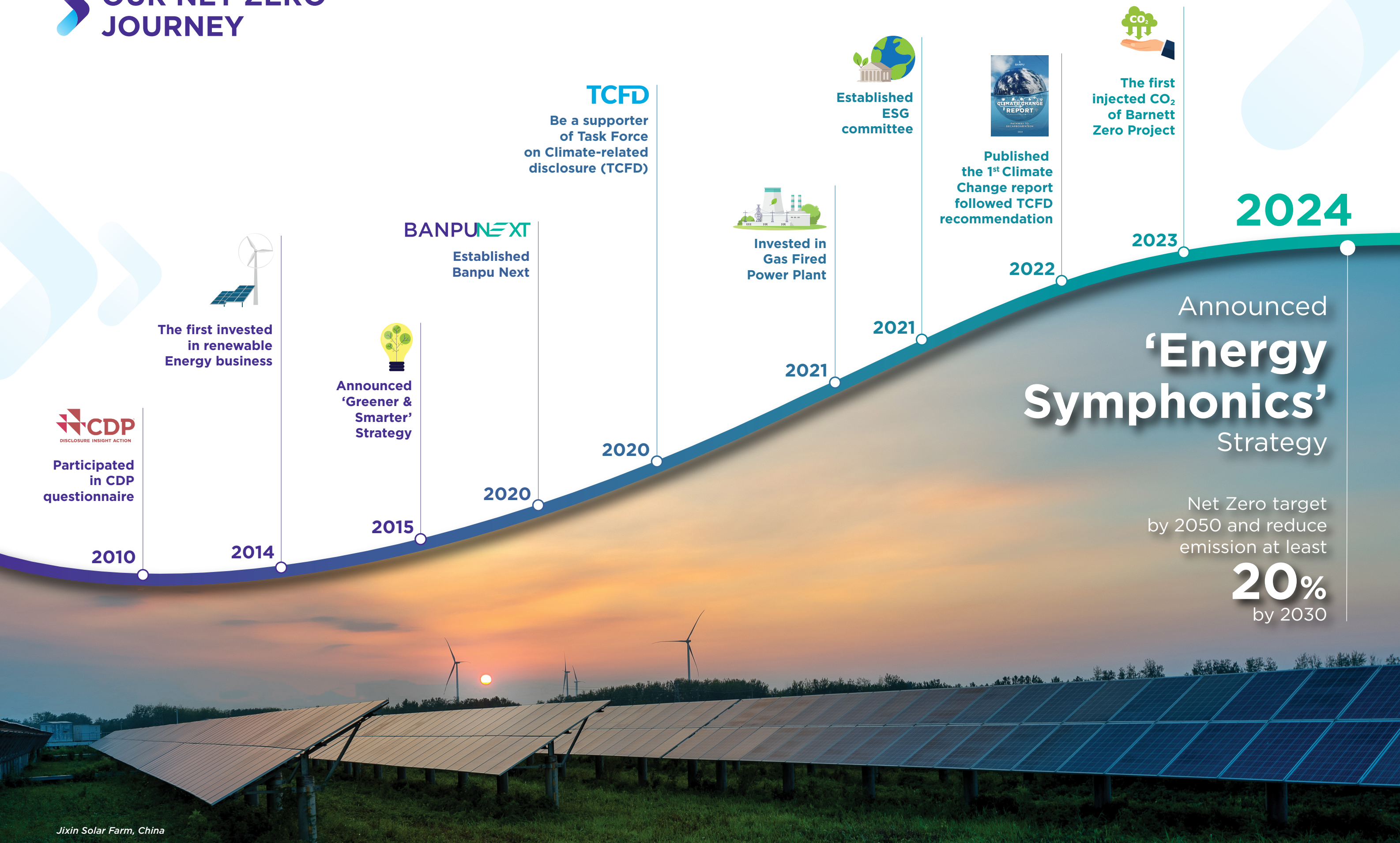
The company is aiming to expand its high-yield renewable energy portfolio, focusing on grid-scale solar and wind projects in the Asia-Pacific region. To address intermittency and enhance energy reliability, the company prioritizes investments in Battery Energy Storage Systems (BESS), which enable more flexibility in energy system that supports the electricity markets. The strategy integrates energy-related services like energy trading and distributed energy systems to support renewable growth. The approach uses carbon credits and downstream opportunities to support the company’s Net Zero goals, creating a scalable, reliable, and economically viable renewable energy ecosystem aligned with long-term sustainability objectives.



NEXT-GEN MINING:

The company is focusing on intelligent mining practices, integrating smart technologies and AI-driven solutions to optimize efficiency, reduce costs, and minimize environmental impact. Investments will be diversified toward strategic minerals critical for energy transition technologies and innovation, while also exploring infrastructure-as-a-business models through upgrades to ports and roads as potential revenue sources. The strategy includes no new coal mine investments, prioritizing emissions reduction through green energy solutions and nature-based solutions. These initiatives underscore a commitment to sustainable practices and align mining operations.

OUR NET ZERO JOURNEY





GOVERNANCE

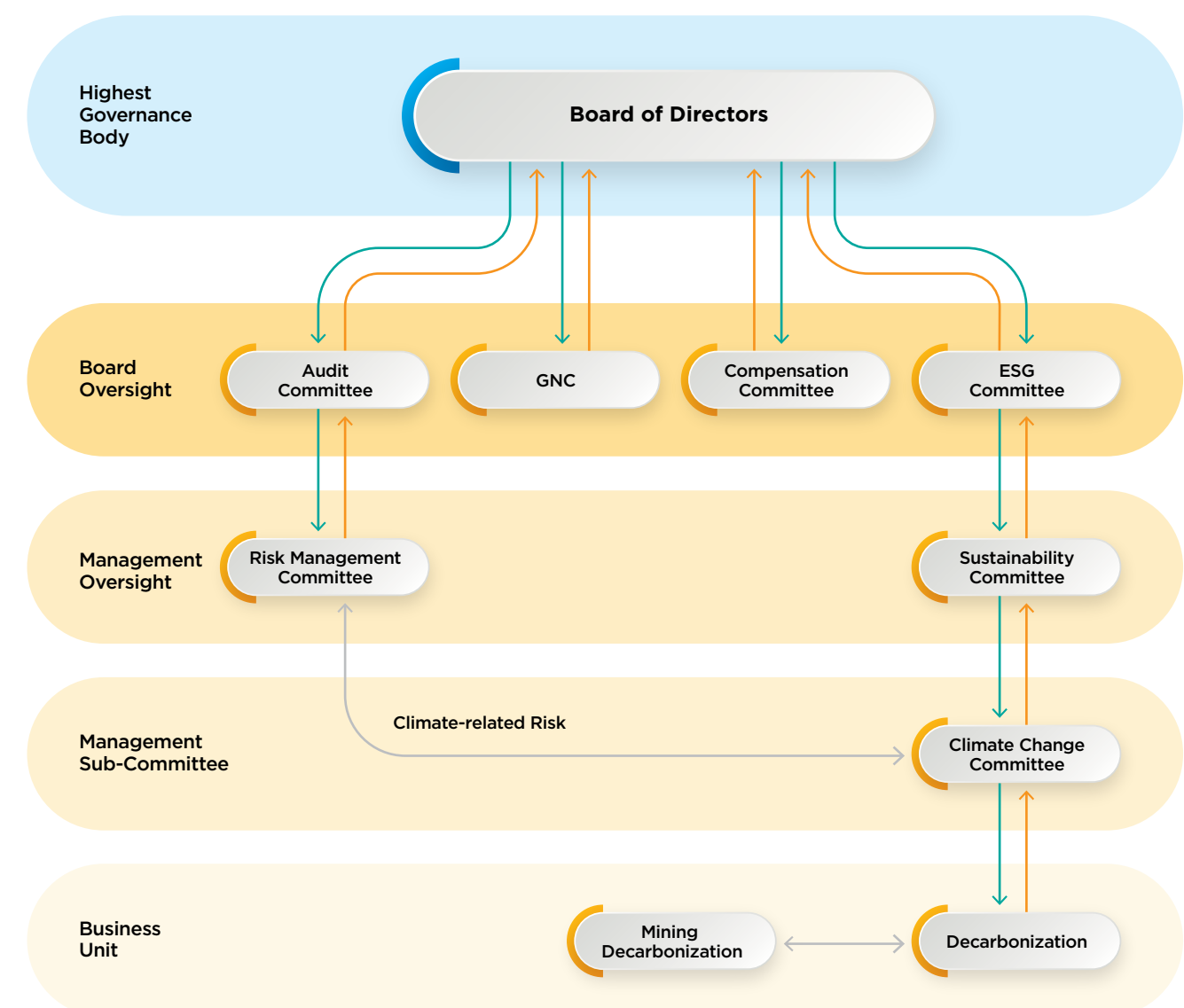
Mining Activity, Indonesia

GOVERNANCE

Banpu oversight into climate-related risks and opportunities is embedded at the highest level of our company. We are continually evolving our corporate governance structure regarding urgency of climate action and our increased understanding of climate change impact on our businesses.

In brief, roles and responsibilities of the Board of Directors and Management related to climate change are as follows;

GOVERNANCE CHART



- Directing, Recommending
- Reporting, Supporting
- Collaborating, Supporting

Board of Director

Role and Responsibility

The Board of Directors monitors, manages, and resolves the climate-change risks through the ESG Committee and Audit Committee.

In practice, the Board of Directors and management held a joint discussion to review and approve the strategic plan and business direction aligning with sustainable development plan to determine business strategies, considering and approving a new strategy which is “Energy Symphonics”. The main focus is on Decarbonization, Gas-Power-CCUS, Renewable+, and Next-gen Mining.

Meeting Frequency

Monthly



ESG Committee

Role and Responsibility

Climate Change tasks are included under the direct responsibility of the ESG Committee, which is appointed by the board of directors. ESG committee consists of 3 independent members from the Board of Directors and one of them acts as a chairman of the committee. Climate-related tasks handled by this committee include reviewing, monitoring and evaluating of ESG-related policies, targets, operations, performance, risks and opportunities. This includes oversight of other climate-related topics such as GHG emission, mitigation, adaptation, and low-carbon investment. Furthermore, the committee also has to monitor stakeholder engagement, materiality assessment, and cooperation with other management teams.

Meeting Frequency

Quarterly



Mr. Piriya Khempon

- Chairman of The Environment, Social and Governance (ESG) Committee
- Member of the Corporate Governance and Nomination Committee

Education/Training

- Master of Science (International Relations), London School of Economics University of London, United Kingdom
- Top Executive Program in Energy (TEA) #7, Thailand Energy Academy
- Financial Statement for Directors (FSD) #45/2022, Thai Institute of Directors Association (IOD)
- The Board's Roles in Climate Governance (BCG), Thai Institute of Directors Association (IOD)



Mr. Pichai Dusdeekulchai

- Member of The Environment, Social and Governance (ESG) Committee
- Member of the Audit Committee

Education/Training

- Master of Business Administration (MBA), Ashland University, Ohio, U.S.A.
- TLCA Leadership Development Program (LDP) #1, Thai Listed Companies Association
- Advance Audit Committee Program (ACCP)
- The Board's Roles in Climate Governance (BCG), Thai Institute of Directors Association (IOD)



Mr. Teerapat Sanguankotchakorn

- Member of The Environment, Social and Governance (ESG) Committee
- Member of the Compensation Committee

Education/Training

- Doctor of Philosophy Program in Information Processing, Tokyo Institute of Technology
- Director Certification Program (DCP) #148/2011, Thai Institute of Directors Association (IOD)
- Advance Audit Committee Program (AACP) #14/2014, Thai Institute of Directors Association (IOD)
- The Board's Roles in Climate Governance (BCG), Thai Institute of Directors Association (IOD)

Banpu is dedicated to a rigorous selection process for Directors and Committees. The company has established comprehensive and detailed qualifications to support this selection. Candidates must meet all listed requirements, including general criteria and specific expertise relevant to each position.

Audit Committee

Role and Responsibility

Audit Committee consists of 3 independent members from the Board of Directors and one of them acts as a chairman of the committee. Some Climate-related tasks are handled by the Audit Committee including setting up working standards for operation team to comply with, doing preliminary auditing before handing it over to external 3rd party auditor and oversight of climate-related risk including climate-related regulation change, strategic risk as well as risk mitigation plan for each business unit. Moreover, the committee is also responsible for the nomination of external auditors according to Banpu's assessment criteria.

Meeting Frequency

Quarterly



Risk Management Committee (RMC)

Role and Responsibility

The RMC role is to review, manage and monitor the Company's risk management and report to Audit Committee. Climate-related risk is one of the risks that is integrated into our Enterprise Risk Management.

Meeting Frequency

Quarterly



SD Committee

Role and Responsibility

Climate-related issues have been taken into consideration by SD committee, including target setting, performance monitoring, and roadmap to achieve target.

Meeting Frequency

Quarterly



Decarbonization

Role and Responsibility

The primary responsibilities of the decarbonization team include collecting, calculating, and preparing data on greenhouse gas emissions and energy usage for management. They also research and communicate appropriate mitigation plans, solutions, and projects to business units and management. Additionally, monitoring the achievement of targets is crucial to ensure optimal performance.

Meeting Frequency

Monthly



Mining Decarbonization

Role and Responsibility

This team works closer and deeper to the mining units globally. The team is also focusing more on the implementation of initiatives to reduce greenhouse gas and energy usage in the mining operation.

Meeting Frequency

Monthly



Chief Executive Officer (CEO)

Role and Responsibility

The CEO is responsible for monitoring GHG emission reduction performance and other climate-related issues for both corporate-wide and country level we have operations. It includes performance review meetings including GHG emission. The CEO is also responsible for ensuring and closely monitoring that the GHG emission performance will be achieved against our target. He is also responsible for considering and making decisions to announce internal carbon pricing for a new business investment to align with our New Strategy, Energy Symphonics.

Meeting Frequency

Monthly



Climate Change Committee

Role and Responsibility

The Climate Change Committee handled overall climate-related issues such as ensuring decarbonization target achievement, identifying resources needed to achieve decarbonization target, assess climate-related risks and opportunities, manage working team to guarantee effective result and mitigation plan and report climate-related performance to upper management team.

Meeting Frequency

Quarterly



Performance Evaluation of CEO and Senior Management

Establishing the CEO's Key Performance Indicators (KPIs) is a critical process overseen by the Board of Directors, with the Compensation Committee playing a vital role in the initial review. The focus dedicated on the commitment to ESG accounts for 15% of the total KPIs. Within the ESG category, specific KPIs cover critical sustainability metrics, such as GHG emissions intensity reduction, occupational fatality and injury rate, and significant corporate governance complaints. The Compensation Committee evaluates the CEO's performance against these KPIs and proposes to the Board of Directors for final consideration. In parallel, the KPIs for senior executives are directly aligned with these CEO's KPIs, in which performance is evaluated by the CEO.





Mui Dinh Wind Farm, Vietnam

STRATEGY

The Task Force on Climate-related Financial Disclosures (TCFD) framework includes a strategic boundary component within its recommendations focusing on how organizations should disclose the actual and potential impacts of climate-related risks and opportunities on their businesses, strategy, and financial planning. The key elements to consider include:

1.

Climate-Related Risks and Opportunities

2.

Impact on Business and Strategy

3.

Transition Plan

1. CLIMATE-RELATED RISKS AND OPPORTUNITIES

Timeframe: to describe the climate-related risks and opportunities identified over these time horizons

- Short-term (to 2025)
- Medium term (to 2030)
- Long term (to 2050)

Business Areas: The impacts focus on our direct operation and products including adaptation and mitigation activities, R&D investments, acquisitions, and divestments.

Material Financial Impact: A significant financial impact is defined as any loss or gain surpassing 15% of Net Profit. Nonetheless, this criterion alone does not determine prioritization. We also consider the probability of events occurring. This means scenarios with low financial impact, but a high likelihood may still be categorized as high-risk scenarios.



CSR Activity, Indonesia

CLIMATE-RELATED RISKS AND OPPORTUNITIES IDENTIFICATION

Banpu employs a risk management strategy that harmonizes acceptable risk thresholds to accomplish business goals and fulfill stakeholder expectations. This approach is consistently implemented across strategic planning, project execution, and day-to-day operations. Utilizing a combination of qualitative and quantitative techniques, the company evaluates the potential impacts of risks.

Result of transitional risks and opportunities and physical risks identification can be summarized as follows;

Risk topics	High-risk item
<div><div>Transitional risk</div><div><ul style="list-style-type: none">Current regulationEmerging regulationTechnology riskLegal riskMarket riskReputational risk</div></div> <div><div>Transitional opportunity</div><div></div></div> <div><div>Physical risk</div><div><ul style="list-style-type: none">AcuteChronic</div></div>	<div><div>Transitional risk</div><div><ul style="list-style-type: none">Carbon PricingStigmatization of sector</div></div> <div><div>Transitional opportunity</div><div><ul style="list-style-type: none">Developing/expanding low-carbon goods and servicesParticipating in carbon market</div></div> <div><div>Physical risk</div><div><ul style="list-style-type: none">DroughtHeatHeavy PrecipitationWildfire</div></div>

SCENARIO APPLIED FOR ASSESSMENT

Transition		
Scenario	Announced Pledge scenario	NZE emission by 2050
Description	A scenario which assumes that all climate commitments made by governments and industries around the world as of the end of August 2023, including Nationally Determined Contributions (NDCs) and long-term net zero targets will be met in full and on time.	A scenario which sets out a pathway for the global energy sector to achieve net zero CO ₂ emissions by 2050. It does not rely on emissions reductions from outside the energy sector to achieve its goals.
Temperature Alignment	2.6 °C in 2100	1.5 °C in 2100

Source: IEA

Physical		
Scenario	RCP 8.5	RCP 2.6
Description	<ul style="list-style-type: none">Mean Radiative forcing at earth surface is 8.5 W/m²Low effort on the implementation of decarbonizationHigh intensity & high frequency in extreme weather	<ul style="list-style-type: none">Mean Radiative forcing at earth surface is 2.6 W/m²High effort on the implementation of decarbonizationMedium intensity & low frequency in extreme weather
Temperature Alignment	4.3 C in 2050	1.6 C in 2050

Source: IEA

2. IMPACT ON BUSINESS AND STRATEGY

Transitional Risks: Transitional risks arise from the shift to a low-carbon economy, impacting various sectors through policy, legal, technological, and market changes. These risks can lead to increased costs for developing low-carbon technologies, reduced value of investments in carbon-heavy industries, and the need for additional regulation and reporting.

Driver & Impact	Metrics used to manage climate-related risks and opportunities	Risk rating								
		Energy Resources			Energy Generation			Energy Technology		
		ST	MT	LT	ST	MT	LT	ST	MT	LT
Carbon Pricing Mechanism Energy Resources and Energy Generation units are carbon-intent businesses. Carbon pricing/carbon tax has been applied at different levels depending on location. It can increase direct costs either through internal management of GHG emissions or offsetting/tax paying the exceed GHG emission from operation.	<ul style="list-style-type: none">GHG emission reduction scope 1 and 2Increase of non-coal business	LM	LM	LM	L	L	LM	L	L	L
Stigmatization Fossil fuel-related business can be affected from negative perceptions and societal attitudes due to high GHG emission. It can lead to decreased support for fossil fuel projects, regulatory challenges, difficulty in obtaining financing, and reputational damage for companies.	<ul style="list-style-type: none">GHG emission reduction scope 1 and 2Increase of non-coal business	H	H	LM	L	LM	LM	L	L	L

Note: ST=short-term, MT=medium-term, LT=long-term

Risk
Opportunity

High
High

Medium to High
Medium to High

Low to medium
Low to medium

Low
Low

Transitional Opportunities: These opportunities lead to cost savings, improved resource efficiency, and access to new markets. Additionally, developing new products and services that address climate change can drive innovation and competitiveness. Building resilience along supply chains further strengthens economic stability.

Driver & Impact	Metrics used to manage climate-related risks and opportunities	Risk rating								
		Energy Resources			Energy Generation			Energy Technology		
		ST	MT	LT	ST	MT	LT	ST	MT	LT
Developing/Expanding low-carbon goods and services In low-emission goods and services, we develop downstream production, deploy GHG mitigation technologies, and provide decarbonization solutions. In gas operations, we monitor emissions and invest in scalable CCUS projects, expanding our gas portfolio. These efforts drive increased revenue through heightened demand and enhanced production capabilities, advancing our net-zero goals.	<ul style="list-style-type: none">Increase of non-coal business	MH	MH	MH	H	H	H	LM	H	H
Participation in carbon market Participating in carbon markets helps businesses reduce their carbon footprint and generate revenue. These markets, based on cap-and-trade or carbon pricing, limit emissions per jurisdiction or sector. In China, our lower-than-quota GHG emissions allow us to sell emission allowances within the China ETS, leveraging governmental regulations.	<ul style="list-style-type: none">Increase of non-coal business	-	-	-	LM	LM	LM	LM	MH	MH

Note: ST=short-term, MT=medium-term, LT=long-term

Risk
Opportunity

High
High

Medium to High
Medium to High

Low to medium
Low to medium

Low
Low

MITIGATION ACTIONS AND OPPORTUNITIES IMPLEMENTATION



DEVELOP CLIMATE CHANGE POLICY AND RELATED DOCUMENTS

Announced climate change policy since 2010 and planned to review in 2025. Corporate Scope 3 estimation guidelines will be published by the end of 2025.



ESTABLISH TARGET AND ITS ROADMAP FOR ACHIEVEMENT

Net Zero Target by 2050 and the reduction of at least 20% from 2023 by 2030 has been announced. Monitoring progress will be conducted annually on a quarterly basis.



IDENTIFY, MANAGE, AND MONITOR RISKS AND OPPORTUNITIES REGULARLY

Risk and opportunity assessment and monitoring have been integrated into Corporate Enterprise Risk Management which will be reviewed on a quarterly basis.



IMPLEMENT INTERNAL CARBON PRICING

Internal carbon pricing (ICP) has been integrated into our new business evaluations to promote low-carbon investments and shape our strategy and financial planning. Our ICP, which serves as a shadow price, covers emissions from Scope 1 and 2. For countries or operations without established carbon pricing regulations or taxes, we have set prices at \$2 per ton of CO₂e for emerging economies and developing countries, and \$15 per ton of CO₂e for advanced economies. This ICP is applied to all business decision-making processes.



EXPAND AND INTRODUCE NEW OPPORTUNITIES FOR GREENER BUSINESS

Investments are focused on advancing technologies to support the transition to Net Zero society across 5 key areas to support the evolving energy landscape.

1. Energy trading platforms and energy storage projects
2. Solar solutions
3. Smart cities and energy management systems (EMS)
4. The vertically integrated battery business
5. E-mobility projects



RESEARCH ON EMERGING TECHNOLOGIES AND MITIGATION MEASURE

Ongoing research into new technologies aimed at reducing greenhouse gas emissions and improving carbon removal both within and beyond the company.

PHYSICAL RISK

Driver & Impact	Metrics used to manage climate-related risks and opportunities	Risk rating								
		Energy Resources			Energy Generation			Energy Technology		
		ST	MT	LT	ST	MT	LT	ST	MT	LT
Drought Drought can have significant impacts on operations due to its effects on water availability, operational costs, and safety considerations. Several key areas where these effects are felt include water supply, dust management, supply chain disruptions, environmental concerns, and community relations.	<ul style="list-style-type: none">• Water consumption reduction• Water stress area assessment	L	LM	H	LM	LM	LM	L	L	L
Heavy Precipitation Heavy precipitation can significantly impact operations in various ways including infrastructure damage, water management challenges, production disruption, and product transportation disruption.	<ul style="list-style-type: none">• Water consumption reduction• Water stress area assessment	LM	MH	MH	L	L	L	L	LM	MH
Wildfire Wildfire can significantly impact operations in various ways including safety risk, infrastructure damage, and production disruption.	<ul style="list-style-type: none">• Coverage of Crisis Management Team (CMT)/Incident Management Team (IMT) exercise	L	LM	MH	L	L	L	L	L	L

Note: ST=short-term, MT=medium-term, LT=long-term

Risk
Opportunity

● High
● High

● Medium to High
● Medium to High

● Low to medium
● Low to medium

● Low
● Low

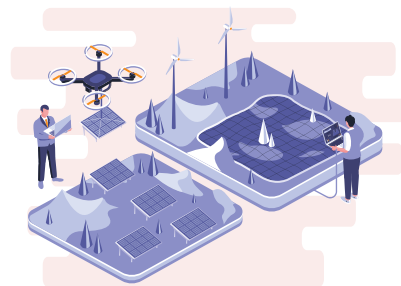
Mining Activity, Indonesia

MITIGATION MEASURE AND ADAPTATION STRATEGY

MITIGATION MEASURES

ENGINEERING CONTROLS:

Reinforcing structures, building flood barriers, or implementing seismic retrofitting. For example, at site, we have evaluated and installed equipment to control flooding at catchment area and maintain pump performance allocation.



LAND USE PLANNING:

Zoning regulations to restrict development in high-risk areas. For example, we have developed and implemented digital applications to identify high-risk areas for employees.

NATURAL RESOURCE MANAGEMENT:

Reforestation, wetland restoration, or erosion control to mitigate the impact of natural hazards.



EMERGENCY PREPAREDNESS:

Developing and practicing emergency response plans for various scenarios. We have implemented Business Continuity Management System based on ISO 22301:2019. Having a management process and a plan to prevent and recover critical business functions and operations in case of cyberattacks, manmade disasters or natural disasters.



INSURANCE IN PLACE:

To mitigate risk, the company has ensured that the insurance was in place and covers our operation.

ADAPTATION STRATEGIES

INFRASTRUCTURE UPGRADES:

Enhancing resilience to withstand extreme weather events or sea-level rise. We have conducted workshops to identify precipitation patterns and develop production planning.



DIVERSIFICATION OF WATER SOURCES:

Investing in alternative water supplies or water conservation measures to address changes in precipitation patterns. At power plant operation, we have planned to reuse water with the plant and aim to make zero discharge to the environment.

ECOSYSTEM-BASED ADAPTATION:

Protecting and restoring natural ecosystems to provide natural buffers against physical risks, such as wetlands for flood control or green infrastructure for heat mitigation.



COMMUNITY ENGAGEMENT AND CAPACITY BUILDING:

Empowering local communities to understand and respond to changing physical risks through education, training, and community-based adaptation initiatives. We have worked closely with the community and developed a project together through Community Development Program. Meanwhile, we have developed a forest education area and open to community to study about species and ecosystem.



3. TRANSITION PLAN

To describe plans for transitioning to a low-carbon economy, including GHG emissions targets and specific activities to reduce emissions, follow these steps:



SET CLEAR TARGETS

- **Target:** Align targets with limiting global warming to 1.5°C.
- **Scope Coverage:** Recently, target includes Scope 1 and 2 to comprehensively address direct and indirect emissions. Scope 3 emissions will be fully disclosed by 2026 and the target for scope 3 will be set accordingly.



IMPLEMENT SPECIFIC ACTIVITIES

- **Technological Innovation:** Renewable energy sources, carbon capture, utilization, and storage (CCUS), and energy-efficient technologies are priority to invest.
- **Energy Efficiency:** Enhance energy efficiency in operations and facilities to reduce electricity consumption.



MONITOR AND REPORT PROGRESS

- **Transparency:** Regularly report progress towards GHG emissions targets to stakeholders and the public.
- **Continuous Improvement:** Continuously monitor climate-related developments and update strategies to ensure they remain effective and resilient.



BKV site, USA

RISK MANAGEMENT

Banpu takes a comprehensive view on reducing our carbon footprint. Our GHG reduction strategy covers our existing assets, assets that Banpu will develop in the future, new acquisitions to the business and our supply chain. Banpu has implemented a comprehensive and structured risk management framework which aligns with the international standard of the Committee Sponsoring Organizations of the Treadway

Commission (COSO) and the International Organization for Standardization's ISO 31000, to identify, assess, manage, and report climate-related risks and opportunities across the organization to prevent any possible adverse impacts on the business and enhances the business opportunities, leading to long-term value creation for Banpu.

RISKS AND OPPORTUNITIES MANAGEMENT PROCESS



RISK MANAGEMENT

To align risk management with strategic goals, the Board of Directors, relevant committees, and the management team consider climate-related risks and opportunities across three key time horizons:

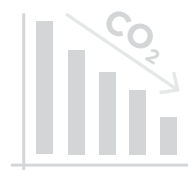
SHORT-TERM (to 2025)

This aligns with Banpu's short-term business and financial planning, ensuring that immediate goals incorporate climate-related considerations.



MEDIUM-TERM (to 2030)

Aligned with Banpu's group business strategy, this timeframe allows for mid-term target setting and adjustments to support "The Banpu Symphonics" strategy, meeting Banpu's sustainability and emissions reduction goals.



LONG-TERM (to 2050)

Using scenario analysis, Banpu explores a range of uncertainties surrounding the energy transition, assessing the resilience of its strategy over the next 25 years.



For risk/opportunity identification, each business unit and supporting unit is responsible for the ongoing identification of climate-related risks and opportunities. Climate-related risks and opportunities are identified across various categories, including physical and transitional risks & opportunities. This process utilizes multiple methodologies, including:

- Workshops with relevant stakeholders to facilitate in-depth discussions on potential climate risks and opportunities.
- Expert consultations with subject matter specialists in environmental, policy, and industry trends.
- Risk assessment tools and financial model evaluations to identify implication specific to operations.
- External monitoring of policy changes, such as global climate agreements (e.g., COP29) and local regulatory shifts.

The Climate-related risks and opportunities are categorized into two categories:

- **Transitional Risks and Opportunities:** These include policy and legal risks, market shifts, reputational impacts, and technological advancements. Banpu's risk management process systematically assesses each of these categories to anticipate regulatory changes, align with market demand for low-carbon solutions, safeguard Banpu's reputation, and identify technological investments essential for the energy transition.
- **Physical Risks and Opportunities:** Climate-related physical risks are further classified into acute risks (e.g., extreme weather events) and chronic risks (e.g., long-term shifts in climate patterns). These risks are evaluated to understand their potential impact on Banpu's operations, particularly for assets in regions vulnerable to climate change.

Climate-related risks and opportunities are assessed within Banpu's enterprise risk management (ERM) framework. This assessment includes evaluating both the likelihood and impact of each risk and opportunity, considering criteria as quantitative (financial impact) and qualitative aspects (strategic, health and safety, environmental, regulatory, reputational, human resources, relationship and service delivery impacts).

This quantitative assessment provides stakeholders with a clear understanding of the criteria and significance assigned to each risk or opportunity. Banpu uses a 1-5 rating scale to assess both the impact and likelihood of each climate-related risk and opportunity. This scale is applied across Banpu, supporting a standardized evaluation that enables comparison and prioritization.

The scoring of impact criteria is defined as follows:

1 Negligible Impact, unlikely to disrupt operations or financial performance.

2 Low Impact on operations or financial performance, manageable within existing resources.

3 Significant Impact that may require adjustments to operational processes or financial planning.

4 Severe Impact with potential to disrupt operations, requiring dedicated resources and strategic adjustments.

5 Catastrophic Impact that could substantially affect Banpu's financial performance or operational stability, requiring urgent and substantial response.

The scoring of likelihood criteria is defined as follows:

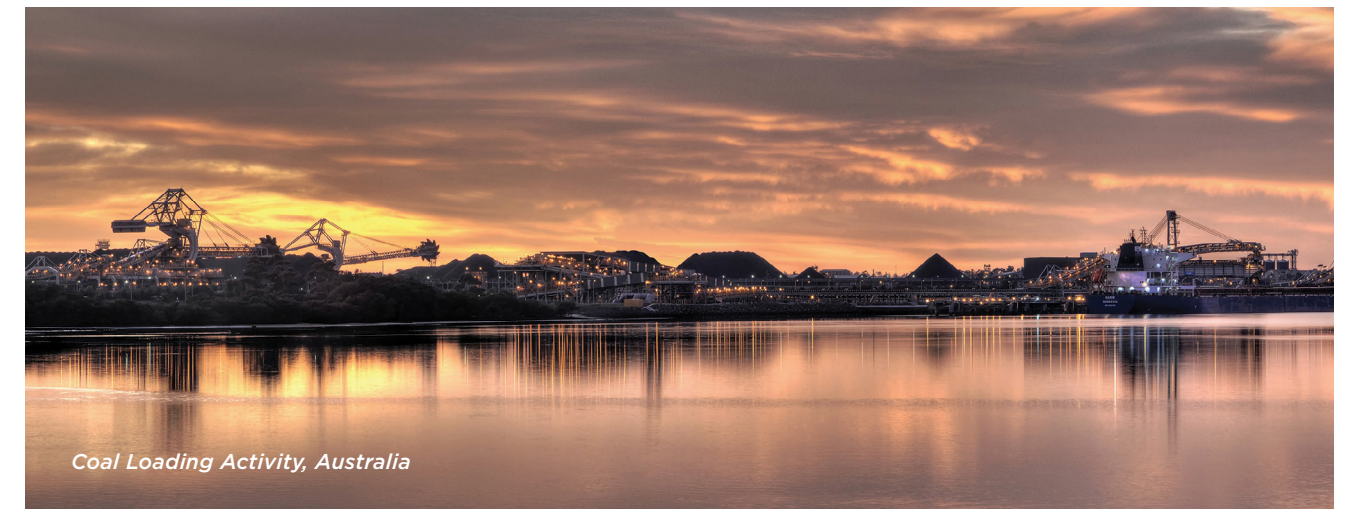
1 Rare: 0% - 20% probability; not likely to occur.

2 Unlikely: 21% - 40% probability; may occur but has not happened in the past.

3 Possible: 41% - 60% probability; likely to occur and has happened in the past.

4 Likely: 61% - 80% probability; expected to occur in most circumstances.

5 Almost Certain: 81% - 100% probability; a common occurrence or recurring risk.



For financial impact thresholds, Banpu defines significant financial impact as any risk or opportunity that could affect more than 15% of net profit. Risks and opportunities with a financial impact above this threshold are classified as high impact and prioritized for immediate attention and mitigation planning.

For each identified risk, Banpu assigns a risk management plan, which is regularly monitored and adjusted as necessary. High-priority risks receive focused attention, with specific

action plans and resources allocated to manage their potential likelihood and impact. Risk mitigation plans may include both operational improvement and strategic shifts. As part of Banpu's annual & strategic planning and risk review process, the management team and Board of Directors evaluate the company's principal climate-related risks and uncertainties. This review considers both internal developments and external factors, allowing Banpu to adjust its risk management approach as necessary to adapt to new challenges in the energy transition.



Jixin Solar Farm, China

METRICS & TARGETS

In this report, 5 gases are discussed due to their relationship with normal operational activities including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF₆). To determine the GHG emissions, the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) was used on Global Warming Potential (GWP). The emission factors were derived from the revised edition of the Corporate Accounting and Reporting Standards and if applicable, the specific emission factors taken from the regional guidelines were used.

INDIRECT GHG (SCOPE 3) EMISSIONS

The Company has improved the category of concerned for other indirect GHG emissions (Scope 3) at 5 key businesses according to the technical guidance for calculating scope 3 emissions guideline (version 1.0). The business activities relating to GHG emissions (Scope 3) were identified as follows;

Category	Business				
	Mining	Gas	Thermal power	Renewable power	Solar rooftop
1. Purchased goods and services	✓	✓	✓	✓	✓
2. Capital goods	✓ ^(a)	✓ ^(a)	✓ ^(a)	✓ ^(a)	✓ ^(a)
3. Fuel- and energy-related activities beyond scope 1 and 2	✓	✓	✓	✓	✓
4. Upstream transportation and distribution	✗	✗	✓ ^(b)	✓	✓
5. Waste generated in operations	✓	✓	✓	✓	✓
6. Business travel	✓	✓	✓	✓	✓
7. Employee commuting	✓	✓	✓	✓	✓
8. Upstream leased assets	✓	✓	✓	✓	✓
9. Downstream transportation and distribution	✓	✓	✓	✓	✗
10. Processing of sold products	✗	✗	✗	✗	✗
11. Use of sold products	✓	✓	✗	✗	✗
12. End-of-life treatment of sold products	✓	✗	✗	✗	✗
13. Downstream leased assets	✗	✗	✗	✗	✗
14. Franchises	✗	✗	✗	✗	✗
15. Investments	✓	✓	✓	✓	✓

^(a) Considered together with category 1

^(b) Considered together with category 3

The Company has disclosed GHG emissions (Scope 3) since 2019, with scope covering only the use of sold products from mining business. Currently, the relevance is under full review as well as the data collection system being developed to ensure coverage across all businesses and will be fully disclosed by 2026.

To mitigate risks and enhance opportunities, we have implemented a set of indicators to track performance against specific goals within a defined timeframe. These indicators are essential for understanding our performance, monitoring progress, and identifying areas that need improvement. By providing clear direction, they help us stay focused on our objectives and serve as benchmarks for measuring success.

These indicators allow us to assess how well we are meeting our goals and highlight any deviations from our planned trajectory. This enables us to take corrective action promptly and ensure we remain on track. Additionally, by comparing current data with historical performance, we can identify trends and patterns that inform our strategic decisions.

List of indicators and its details are as follows;

Indicator	Target	2024 target	Progress to target year (2025)	SDG
GHG emissions	Percentage of GHG (scope1 and 2) emission reduction	<div><div>• Mining: -5% from BAU</div><div>• Power Business: -16% from BAU</div></div>	On track	<div><div>7</div><div>RENEWABLE AND CLEAN ENERGY</div><div>13</div><div>CLIMATE ACTION</div></div>
Water Consumption	Water consumption intensity	<div><div>• Mining: ≤1.556 m³/tonne of finished coal</div><div>• Thermal Power: ≤0.917 m³/MWh</div></div>	<div><div>• Slightly exceeded the mining target.</div><div>• On track for Thermal Power</div></div>	<div><div>6</div><div>CLEAN WATER AND SANITATION</div><div>12</div><div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div></div>
Water Stress area	Coverage of water stress area assessment	-	-	<div><div>6</div><div>CLEAN WATER AND SANITATION</div><div>12</div><div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div></div>
Critical Management Team (CMT or Incident Management Team (IMT) exercise	Coverage of CMT or IMT exercise	<div><div>• ≥85% (at corporate level)</div></div>	On track	<div><div>8</div><div>DECENT WORK AND ECONOMIC GROWTH</div></div>

PERFORMANCE

To enhance transparency and accuracy in reporting our environmental impact, this year we have thoroughly reviewed our greenhouse gas (GHG) emissions inventory. During this review, we recognized the need to restate our GHG emissions by excluding emissions from contractors not under our direct control from Scope 1 and 2 emissions. Previously, our GHG inventory included emissions from both our operations and those of our contractors. To provide a clearer and more accurate representation, we have decided to reclassify contractor emissions from Scope 1 and 2 to Scope 3. This adjustment aligns with the Greenhouse Gas Protocol's guidance on organizational boundaries.

Parameter	2021 ^(b)	2022 ^{(a) (b)}	2023 ^(b)	2024
Scope 1 (MtCO ₂ e)	2.747	7.952	7.522	8.797
Scope 1 - biogenic (MtCO ₂ e)	0.094	0.042	0.051	0.063
Scope 2 - location based (MtCO ₂ e)	0.237	0.269	0.246	0.251
Scope 2 - Market based (MtCO ₂ e)	0.237	0.269	0.246	0.253
Scope 3 (MtCO ₂ e)	58.323	51.086	48.856	48.593
- Cat 1: Purchased goods and services	-	-	-	0.925^(c)
- Cat 2: Capital goods	-	-	-	0.256^(d)
- Cat 3: Energy related activities beyond scope 1&2	-	-	-	1.093^(d)
- Cat 6: Business travel	-	-	-	0.611^(c)
- Cat 8: Upstream leased assets	-	-	-	0.051^(e)
- Cat 11: Use of sold product	-	-	-	36.315^(f)
- Cat 15: Investments	-	-	-	10.003^(d)
Water Consumption (ML)	12,085	36,698	59,935	66,380
Operation located in water stress area (sites)	-	-	-	21
Coverage of CMT/ IMT exercise (%)	100 ^(g)	100	57	80

^(a) Excludes 2 coal projects in Indonesia

^(b) Adjusted from previous report

^(c) Includes mining business in Indonesia only

^(d) Includes thermal power business only

^(e) Includes mining business, solar rooftop & floating business in Thailand, and the head office

^(f) Includes mining business only

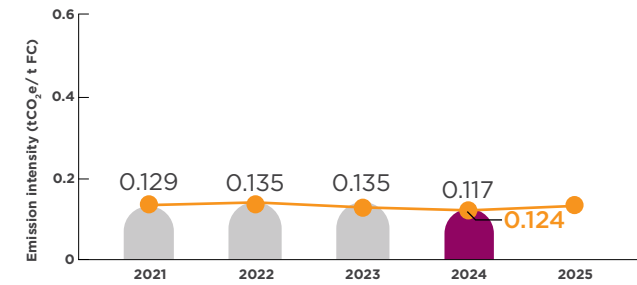
^(g) The real activation of CMT/IMT is considered as a BCP exercise

For more details please find at Banpu Sustainability Report 2024

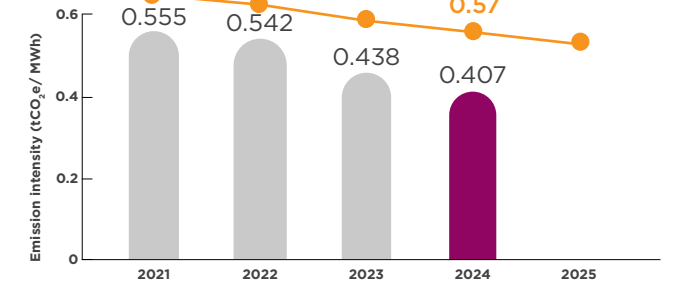
PERFORMANCE AGAINST TARGET

GHG emissions

Mining business

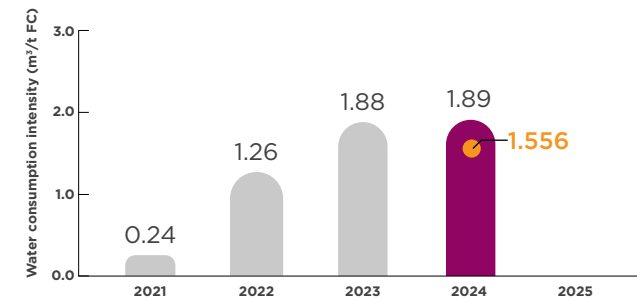


Power Business

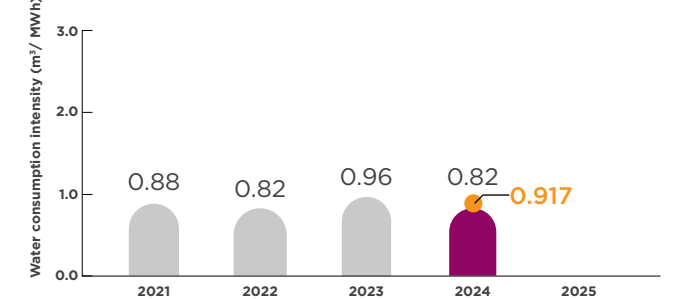


Water Consumption

Mining business

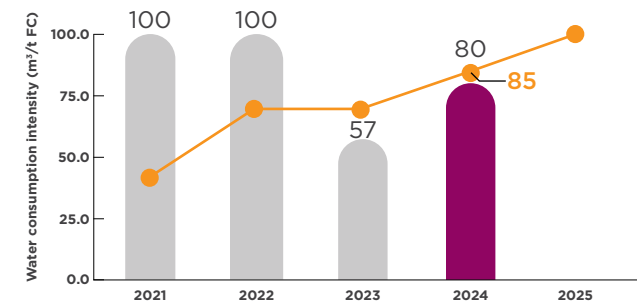


Thermal business



Critical Management Team (CMT) or Incident Management Team (IMT) exercise

Coverage of CMT and IMT exercise(percentage)



Actual performance Business as usual

LOOKING AHEAD

LOOKING AHEAD

This report includes forward-looking statements that are in accordance with our current expectations and assumptions concerning forecasted developments and various factors. These statements do not represent historical facts and do not assure future performance, as they are influenced by numerous assumptions, risks, and uncertainties that may evolve over time. The forward-looking statements are valid only as of the date they are issued, considering management's prediction based on the information available at that time regarding the outcomes and timing of future events. Although we consider the plans, intentions, and expectations indicated in these statements to be reasonable, there is no guarantee that they will be accomplished. A range of factors could lead to actual outcomes and results differing significantly from those expressed, implied, or projected in these statements. Therefore, readers should not place excessive reliance on these forward-looking statements, except as mandated by law. We intend to enhance our disclosures in the future to provide the most recent valuable information to stakeholders by aligning them with new facts and regulations that are affected by the changing of climate scene.

This report serves as a basis for actions in line with TCFD recommendations. Although we aim to report our disclosures consistent with the guidelines, we cannot ensure complete compliance with the framework. Furthermore, our disclosures may be subject to change due to updates in framework requirements, availability of information, shifts in our business operations or relevant government policies, or other factors, some of which may be outside our control.

In order to manage our portfolio of greenhouse gas emissions, we have identified climate change related risks and opportunities, as well as targets. As stated in the report, we have carried out assessments of climate-related risks and opportunities that could have an important financial impact on Banpu in short-, medium-, and long-term. Additionally, we have begun to formulate a new aspiring decarbonization road map to achieve net zero emissions target by 2050. We will keep track of modifications and adjust our strategy as needed to address shifting perspectives on climate change and climate-related disclosures.

We welcome and encourage our stakeholders to provide any feedback you may have on this report by contacting us via

 climatechange@banpu.co.th



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