



CLIMATE CHANGE *Report*

PATHWAY TO
DECARBONIZATION
2023

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INTRODUCTION

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MESSAGE FROM ESG COMMITTEE

“

OUR JOURNEY
TOWARD SUSTAINABILITY
IS AN ONGOING ONE,
A TESTAMENT TO
THE TIRELESS EFFORTS
AND STEADFAST DEDICATION
OF OUR TEAM

”



As we unveil our second Climate Change Report in alignment with the Task Force on Climate-related Financial Disclosures (TCFD) guidelines, I am filled with profound sense of progress and unwavering determination. This year's report builds on the foundation we laid last year, further embedding our commitment to sustainability into the very fabric of our operations.

In this report, we not only illuminate significant strides we made over the past year in reducing our carbon footprint, but also sharpen our focus on the challenges and opportunities await us on the horizon. Our journey toward sustainability is an ongoing one, a testament to the tireless efforts and steadfast dedication of our team. It underscores our strong commitment to be an integral part of the solution in shaping a low-carbon economy.

Acknowledging that the path ahead is complex and filled with uncertainties, we remain resolute in our commitment to transparency and accountability. Our risk management processes have been fortified, and our engagement with stakeholders continues to evolve. Together, we ensure that our strategy remains robust and responsive to the ever-changing landscape of climate-related risks and opportunities.

**AS CHAIRMAN OF THE ESG COMMITTEE, I EXTEND
MY HEARTFELT GRATITUDE TO OUR DEDICATED TEAMS, VISIONARY
LEADERS, AND ALL STAKEHOLDERS WHO SHARE OUR VISION.
LET US CONTINUE THIS JOURNEY—ONE WHERE PURPOSE MEETS PROGRESS,
AND WHERE EVERY DECISION ECHOES THROUGH TIME.**

A handwritten signature in black ink, appearing to read 'Piriya Khempon'.

Mr. Piriya Khempon

Chairman of the Environment, Social,
and Governance Committee

MESSAGE FROM CEO

I am pleased to present our second Climate Change Report for the year 2023. Guided by the TCFD recommendations, our report contains a comprehensive assessment of the impact of climate change on our company and represents a significant step forward in our commitment to addressing climate change and ensuring a sustainable future for our planet.

In this report, we have enhanced our climate scenario analysis to align with the Nationally Determined Contributions (NDCs) in each country where we have operations. This alignment underscores our commitment to national and global efforts in mitigating climate change and highlights our strategic direction toward decarbonization. In addition, we have conducted a thorough reassessment of climate-related risks and opportunities at the site level, ensuring a more granular and precise understanding of our operational impacts and resilience. Furthermore, a notable advancement in our report is the inclusion of an in-depth analysis of physical risks, guided by the latest IPCC's Sixth Assessment Report (AR6). This analysis has been instrumental in shaping our adaptation strategies.

We have seen significant improvements in our carbon emissions reduction, as well as an increase in our renewable energy portfolio. Our commitment extends beyond reporting – we actively monitor and disclose our climate-related financial performance and progress. In addition, we have implemented and planned decarbonizing initiatives throughout our operations.

AS WE MOVE FORWARD, OUR COMMITMENT EXTENDS BEYOND MERE MEETINGS, WE STRIVE TO SURPASS OUR SUSTAINABILITY GOALS. WE ARE INSPIRED BY THE COLLECTIVE ACTION OF OUR PARTNERS, CUSTOMERS, AND ALL STAKEHOLDERS. WE INVITE YOU TO JOIN US IN THIS CRITICAL ENDEAVOR. TOGETHER, WE CAN CREATE A MORE SUSTAINABLE AND RESILIENT FUTURE FOR ALL.



Sinon Vongkusolkit
Chief Executive Officer

“

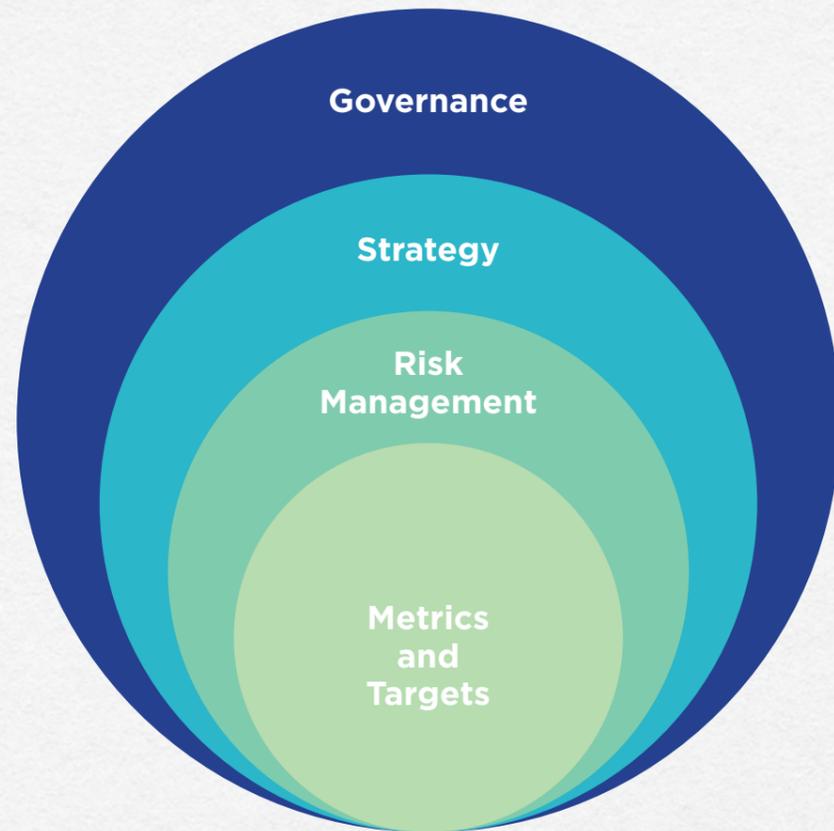
THIS ALIGNMENT UNDERSCORES OUR COMMITMENT TO NATIONAL AND GLOBAL EFFORTS IN MITIGATING CLIMATE CHANGE AND HIGHLIGHTS OUR STRATEGIC DIRECTION TOWARD DECARBONIZATION.

”



TCFD FRAMEWORK

Task Force on Climate-related Financial Disclosure (TCFD) are structured around four thematic areas that represent core elements of how organizations operate: governance, strategy, risk management, and metrics and targets.



Governance:

to disclose the organization's governance around climate-related risks and opportunities.



Strategy:

to disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.



Risk Management:

to disclose how the organization identifies, assesses, and manages climate-related risks.



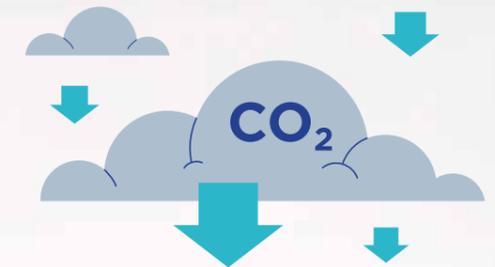
Metrics and Targets:

to disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

In this report, we describe how climate change scenarios may impact our business and outline our strategy to mitigate those potential impacts and ensure our resilience. Our understanding of the challenges associated with climate change is evolving and we continuously update our plans accordingly.

While this report focuses on Banpu's strategy to mitigate the climate-related risks and opportunities to our business, we are also taking actions to tackle climate change at source. We continuously invest in projects and programs that can reduce and/or remove greenhouse gas (GHG) emissions towards low carbon society. To pursue our sustainability:

- Our Decarbonization Roadmap is developing which aims to reduce our GHGs emission in scope 1 and 2 as well as to fully disclose scope 3 by 2026.
- We have sought more opportunities in renewable energy investment by increasing investment to be 1.1 GW by 2025, as well as no new inorganic investment in coal business since 2020.



ABOUT BANPU

Banpu as an international versatile energy provider is undergoing a strategic transition aimed at fostering a “Greener & Smarter” value structure. This initiative is designed to create a sustainable platform for value growth, benefiting both stakeholders and shareholders. The company’s recent investments have focused primarily on lower carbon and clean energy technology businesses including gas, renewables, smart energy solutions i.e., solar rooftop, energy storage systems, e-mobility solutions and energy management.

Banpu is prioritizing an eco-friendly business and smart integration of technologies and innovations, its strategy centers around the 3Ds of energy: Decentralization, Decarbonization, and Digitalization to establish an integrated clean energy technology portfolio throughout the Asia-Pacific encompassing renewable energy generation, solar rooftop solutions, energy storage systems, energy management systems, e-mobility solutions, smart infrastructure, and electricity trading. In addition, Banpu’s medium-term plans involve efficiency improvement of all operations, ensuring stability in respond to requirement from customers, maintaining financial stability through disciplined financial and liquidity management and focusing on capacity expansion within existing pipelines. Its long-term plans aim to strengthen cash flow through operational improvement and cost management, ensuring timely projects development, and pursuing new opportunities for expansion in baseload projects and development in renewable energy and energy technology sectors.

To accelerate the group’s transformation, Banpu also established a Corporate Venture Capital (CVC) Department, aiming at strengthening Banpu’s high-growth asset-light strategy and building new businesses to capture the growth of decarbonization trends through investments and partnerships. These partnerships leverage Banpu’s existing competitive advantages and focus on acquiring new capabilities that can be scaled up quickly across geographies enable Banpu to tap into a stream of emerging opportunities for both direct investment and co-investment in projects and startups.

These strategic shifts have enhanced the operational efficiency and sustainable growth of Banpu’s 3 core business groups:

1 ENERGY RESOURCES:



GAS BUSINESS:

The company engaged in the acquisition, operation and development of natural gas and NGL properties primarily located in the Barnett Shale in the Fort Worth Basin of Texas (the “Barnett”) and in the Marcellus Shale in the Appalachian Basin of Northeastern Pennsylvania (“NEPA”), committed to sustainable operations through net zero strategy with focus on reduction and offsetting of emissions from existing gas operations through CCUS* with the commitment to achieve Scope 1 and Scope 2 Net Zero by 2025.



Remark: *Carbon Capture, Utilization, and Storage

MINING BUSINESS:

The company encompasses marketing, trading, and logistics of coal; however, the company is diversifying its portfolio by expanding into potential investments in strategic minerals. To facilitate this expansion, Banpu has established a dedicated investment team. This move aims to capitalize on the company’s existing strengths in higher-growth commodities.



2 ENERGY GENERATION:



This includes diverse portfolios of quality thermal and renewable power plants.

Aiming at providing excellence operational and financial performance with sustainable growth, targeting green energy portfolio investments in high-growth regions, and implementing a balanced approach to revenue generation through combination of long-term power purchase agreement (PPA) and maximizing value in the US merchant electricity market.



3 ENERGY TECHNOLOGY:



A leading Smart Energy Solutions aiming to become Net Zero solution provider in Asia-Pacific

The energy technology solutions portfolios aim to support the transition to Net-Zero society with several core business groups consisting of Energy Storage Systems, Energy Trading, e-Mobility, and Smart Cities & Energy Management. The provided solutions are supported by a smart platform that equips the customers with the ease of real-time energy management via our digital platform and application, with continued development of ecosystem through acquisitions and partnerships to grow capabilities and operations.



BANPU ROAD TO 2030



Note: *nature-based solutions

BANPU 2030

BUILDING AN ANTIFRAGILE PORTFOLIO

TRANSFORMATION OF CORE VALUE

Accelerating sustainable energy transition to cleaner resources, generation, and energy technology.

Strengthening current and new integrated energy value chain across key countries, while integrating digital and AI technologies into all operations.



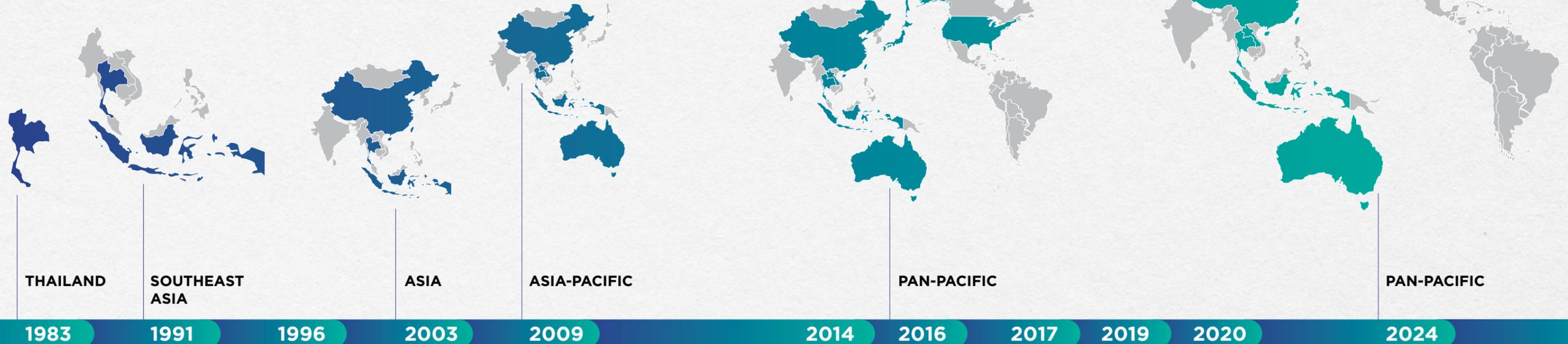
SUSTAINABILITY-ORIENTED GROWTH

Focused on building an antifragile portfolio, lowering emissions, stronger returns, and strengthening portfolio resiliency and against disruptions and trends.



BANPU: 40 YEARS JOURNEY

BANPU'S GEOGRAPHIES



ENERGY RESOURCES

1983

BANPU MINING
Established to focus on coal mining in Thailand

1991

2003

2009

2011

2016

GAS
Commenced natural gas operations in the US

2022

ENERGY GENERATION

1996

THERMAL POWER
Established thermal power business in Thailand

2006

2014

2016

2018

RENEWABLES
Entered renewable power business with first investment in Japan solar

2021

2023

ENERGY TECHNOLOGY

BANPU NEXT ENERGY TECHNOLOGY
Ventured into energy technology with investment in solar rooftop business, followed by battery production, smart cities, e-mobility and energy trading

2021

2022

2023

2021

2022

2023

BANPU
International versatile energy provider
offering integrated energy solutions across the Pan-Pacific



GOVERNANCE

Describe the board's oversight of climate-related risks and opportunities

Describe management's role in assessing and managing climate-related risks and opportunities

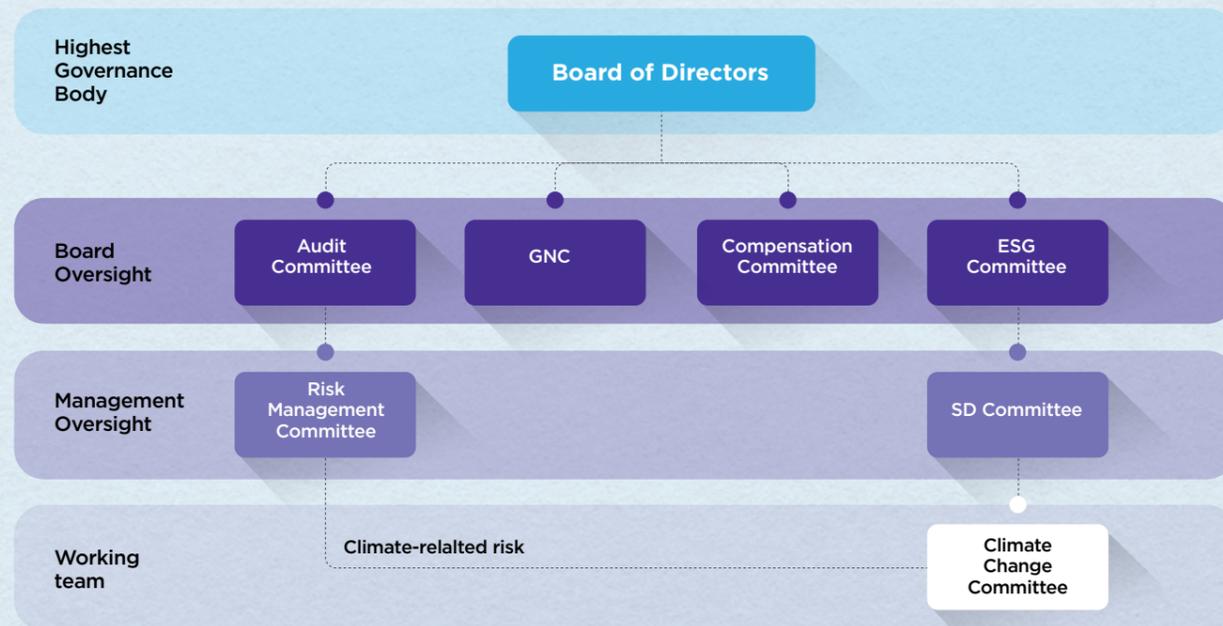
GOVERNANCE

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

Our journey on decarbonization



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



Board of Directors

Role and Responsibility

The Board of Directors monitors, manages, and resolves the climate-change risks through 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, reinforcing the Greener & Smarter strategy. The focuses are on building competitiveness, creating added value for stakeholders, and adapting to changing economic and industrial environments.

Meeting Frequency

Monthly

ESG Committee

Role and Responsibility

Climate Change issues 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 acting as a chairman of the committee. Climate-related issues including risks and opportunities are evaluated, reviewed, and monitored by this committee. This includes overseeing other climate-related topics such as GHGs emission, mitigation, adaptation, low-carbon investment.

Meeting Frequency

Quarterly

Audit Committee

Role and Responsibility

Audit Committee consists of 3 independent members from the Board of Directors and one of them acting as a chairman of the committee. Climate-related risk is one of the risks that oversight by this committee including climate-related regulation change, strategic risk, etc. as well as risks mitigation plan for each BU.

Meeting Frequency

Quarterly

Risk Management Committee (RMC)

Role and Responsibility

The RMC role is to review, manage and monitor 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



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 meeting included 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 Greener & Smarter strategy.

Meeting Frequency

Monthly



SD Committee

Role and Responsibility

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

Meeting Frequency

Twice a year



STRATEGY

Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term

Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2 C or lower scenario

STRATEGY

We've completed comprehensive analyses of both transitional and physical climate scenarios across all our assets to assess the likelihood and magnitude of potential climate-related effects. Our assessments are framed within three distinct timeframes: short-term (recent - 2025), medium-term (2026-2030), and long-term (2031-2050). These timeframes are consistently applied across our evaluations and strategies for mitigation and adaptation.

Primarily, our analysis focused on assets under our operational control at the national level. Additionally, we took into account assets where we hold minority stakes at the corporate level.

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 transition risks and opportunities and physical risks identification can be summarized as follows;

Risk topics

Transition risk

- Current regulation
- Emerging regulation
- Technology risk
- Legal risk
- Market risk
- Reputation risk

Transition opportunity

- Resource efficiency
- Energy source
- Products and services
- Markets
- Resilience

Physical risk

- Acute
- Chronic



High priority risks and opportunities

Transition risk

- Carbon Pricing
- Stigmatization of sector

Transition opportunity

- Developing/expanding low carbon goods and services
- Participating in carbon market

Physical risk

- Drought
- Heat
- Heavy Precipitation
- Wildfire



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 take into account the probability of events occurring. This means scenarios with low financial impact, but a high likelihood may still be categorized as high-risk scenarios.

Scenario applied for assessment

Scenario	Transition	
	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

Scenario	Physical	
	RCP 8.5	RCP 2.6
Description	<ul style="list-style-type: none"> • Mean Radiative forcing at earth surface is 8.5 W/m² • Low effort on the implementation of decarbonization • High intensity & high frequency in extreme weather 	<ul style="list-style-type: none"> • Mean Radiative forcing at earth surface is 2.6 W/m² • High effort on the implementation of decarbonization • Medium intensity & low frequency in extreme weather
Temperature Alignment	4.3 C in 2050	1.6 C in 2050

Source: IPCC

Result of Risk assessment

Transition Risk

Driver	Impact	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 business. Carbon pricing/ carbon tax has been applied in different level depends on location. It can increase direct cost either internal manage GHGs emission or offsetting/tax paying the exceed GHGs emission from operation.	●	●	-	●	●	●	●	●	●
Stigmatization	Fossil fuel-related business can be affected from negative perceptions and societal attitudes due to high GHGs emission. It can lead to decreased support for fossil fuel projects, regulatory challenges, difficulty in obtaining financing, and reputational damage for companies.	●	●	-	●	●	●	●	●	●

Transition Opportunity

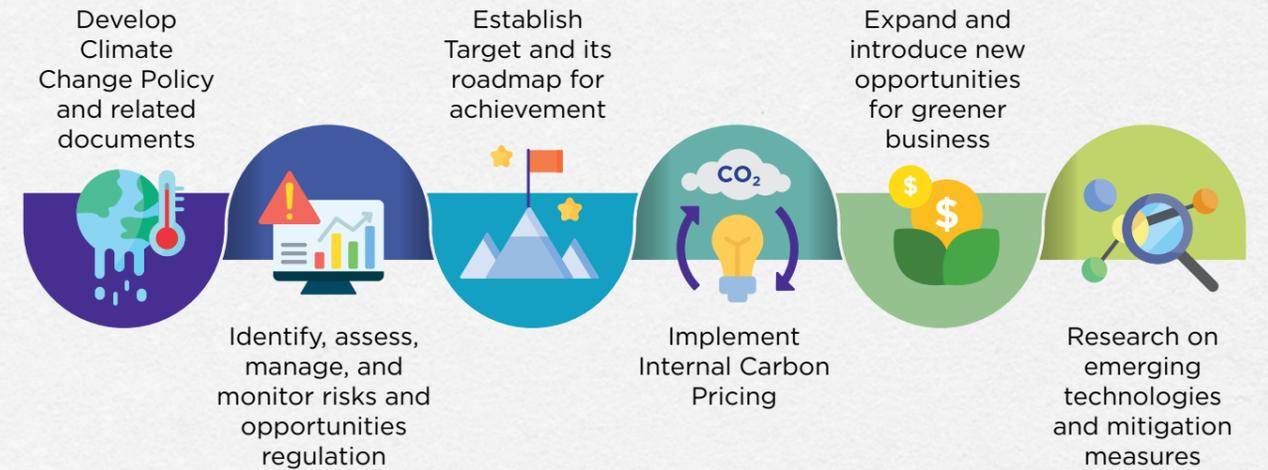
Driver	Impact	Risk rating								
		Energy Resources			Energy Generation			Energy Technology		
		ST	MT	LT	ST	MT	LT	ST	MT	LT
Developing/ Expanding low carbon goods and services	In the domain of low-emission goods and services, diverse opportunities abound. In mining, we focus on developing downstream production, deploying mitigation technologies to curb greenhouse gas (GHG) emissions, and serving as a decarbonization solution provider for our customers. Additionally, in our gas operations, we actively engage in emission monitoring and invest in carbon capture, utilization, and storage (CCUS) technology. Continuously enhancing our CCUS projects, we utilize their scalability to expand our gas portfolio and advance our journey towards net zero objectives. With an expanded array of low-emission offerings, we foresee increased revenue driven by heightened demand and augmented production capabilities.	●	●	●	●	●	●	●	●	●
Participation in carbon market	Participating in carbon markets offers businesses a dual advantage of reducing carbon footprint and generating revenue. These markets, based on cap-and-trade or carbon pricing, impose limits on allowable carbon emissions per jurisdiction or sector. Businesses must acquire carbon credits to comply. For instance, in China, our lower-than-quota GHG emissions enable us to sell our emission allowances within the China Emissions Trading System (ETS) market, seizing this opportunity provided by governmental regulations.	-	-	-	●	●	●	●	●	●

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

Risk ● High ● Medium to High ● Low to medium ● Low
 Opportunity ● High ● Medium to High ● Low to medium ● Low

Mitigation and adaptation plan for transition risks and opportunities

At Corporate level



At Business level

Energy Resources	Energy Generation	Energy Technology
<ul style="list-style-type: none"> Collaborate with renewable assets on carbon management strategy for alternative energy sources, storage, technologies/projects. Undertake assurance audit of the Banpu Resources Emissions model (BREM). Multi-Disciplined team to develop business plan for stage 1. of Scope 1 emissions reduction plan. Secure Gas emission/De-carbonization Manager to manage ongoing gas emissions monitoring and process oversight. Develop decarbonization initiatives through energy efficiency projects, fuel consumption reduction project, fuel switching project, CCUS, etc. Monitor updated law and regulation regularly. 	<ul style="list-style-type: none"> Monitor updated guidelines such as NDRC NEA's guideline on measures to improve the mechanism for a green-oriented low-carbon transition of energy. Implement plan on accelerating the establishment of a unified and standardized carbon emission statistical calculation system. Seek opportunity to participate in Emission Reduction Trading within Country. Develop decarbonization initiatives through energy efficiency projects, fuel consumption reduction project, fuel switching project, etc. Monitor updated law and regulation regularly. 	<ul style="list-style-type: none"> Optimize investment portfolio, focusing on financial returns from existing and future investments. Strengthen position as an integrated battery player, expanding across the value chain from production to BESS deployment. Monitor updated law and regulation regularly.

Physical Risk

Driver	Impact	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.	●	●	●	●	●	●	●	●	●
Heat	The impact of heat on operations can be significant, affecting both the safety of workers and the efficiency of production. These impacts include equipment performance, water management, fire risk. Heat can have diverse and far-reaching impacts on operations, highlighting the importance of proactive planning, risk mitigation strategies, and employee welfare measures to ensure the safety and sustainability operation in hot weather conditions.	●	●	●	●	●	●	●	●	●
Heavy Precipitation	Heavy precipitation can significantly impact operations in various ways including infrastructure damage, water management challenges, production disruption, product transportation disruption.	●	●	●	●	●	●	●	●	●
Wildfire	Wildfire can significantly impact to operations in various ways including safety risk, infrastructure damage, production disruption.	●	●	●	●	●	●	●	●	●

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

Risk ● High ● Medium to High ● Low to medium ● Low

Mitigation and adaptation plan for physical risk

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 cover 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 zero discharge to outside.

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 project together through Community Development Program. Meanwhile, we have developed forest education area and open to community to study about Species and ecosystem.



RISK MANAGEMENT

Describe the organizations processes for identifying and assessing climate-related risks

Describe the organization's processes for managing climate-related risks

Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management

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's climate-related risk identification and assessment are integrated into Banpu's overall risk management process which align with the international standard of The Committee Sponsoring Organizations of the Treadway Commission

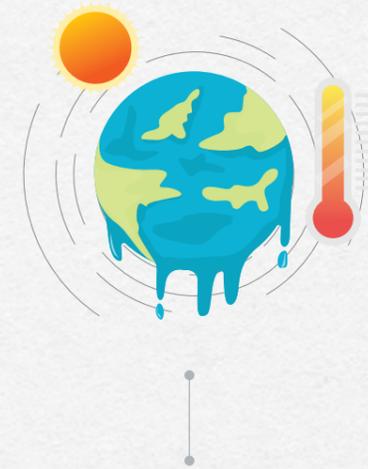
(COSO) and the International Organization for Standardization's ISO 31000. Banpu integrates enterprise risk management framework throughout our business through a structured process that establishes a common methodology for identifying, assessing, managing, and monitoring risks to prevent any possible adverse impacts on the business and enhances the business opportunities, leading to long-term value creation for Banpu.



For the integration process of climate-related risks assessment as an input to the business strategy, Banpu regularly assesses the climate-related risks and opportunities with collaborations among the risk management team, decarbonization team, and

all BUs and related SUs. Timeframe of assessment is defined to be 3 phases: short-term (1-2 years), medium-term (3-10 years), and long-term (>10 years). The main tools Banpu uses to identify climate-related risks and opportunities are:

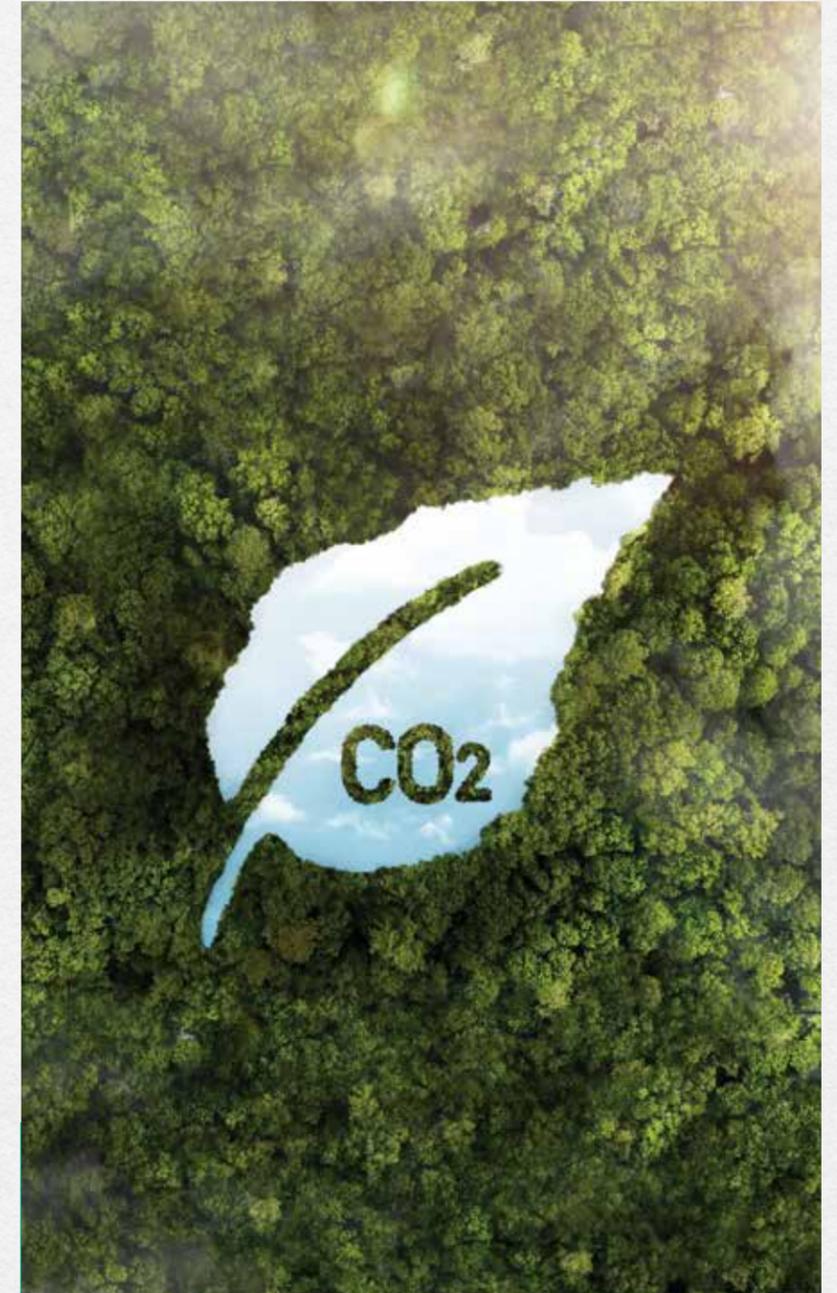
Climate change scenario analysis to evaluate our exposure to climate-related risks and opportunities;



External environment monitoring, including new regulations, emerging technologies, market developments and potential change of policies and regulations;



Stakeholder engagement in the related forums e.g. COP, in order to monitor new positioning, emerging trends and regulations.



The Climate-related risks and opportunities are prioritized based on their likelihood and severity of impact. The aspects of impacts cover financial, strategic, health, safety, environment, regulatory and license, reputation, relationship, human resources, and service delivery impacts. These categorizations are standardized for risk assessment processes across Banpu, allowing for comparability to other non-climate-change-related risks, and integration with standard risk management processes in Banpu.

METRICS & TARGETS

Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process

Disclose Scope 1, Scope 2, and if appropriate, Scope 3 GHG emissions and the related risks

Describe the target used by the organization to manage climate-related risks and opportunities and performance against targets

HIGHLIGHT

Barnett Zero, CCUS project in the US.

BKV, a prominent natural gas producer in the United States, recently celebrated the launch of the Barnett Zero initiative in Bridgeport, bringing together experts and industry leaders. This initiative aims to reduce greenhouse gas emissions while also generating significant revenue. Barnett Zero utilizes carbon capture and sequestration (CCS) methods to capture and store carbon dioxide (CO₂) deep underground, preventing its release into the atmosphere.



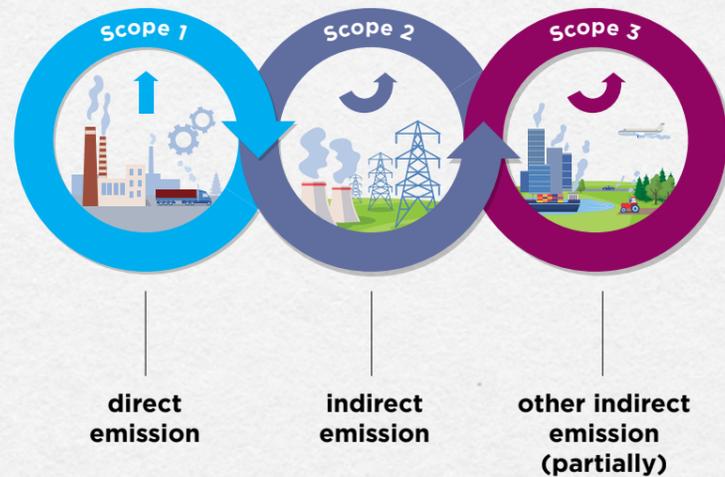
As the first EPA-approved Class II CCS project in the country and a pioneering effort in commercial CCS, Barnett Zero demonstrates a financially viable approach to addressing environmentally harmful emissions. Government subsidies, including \$85 per ton of CO₂ equivalent processed and injected received from the Internal Revenue Service, play a crucial role in the project's revenue stream.

with EnLink. It is anticipated that the project will sequester up to 210,000 metric tons of CO₂ equivalent annually over its operational lifetime.

Looking ahead, BKV is poised to introduce its second CCS project, the Cotton Cove initiative, this year. Additionally, the company is actively pursuing three additional natural gas processing projects geared toward capturing third-party emissions, with an estimated injection capacity of around 970,000 metric tons of captured CO₂ equivalent per year.

After two years of focused efforts, BKV achieved a significant milestone in November by successfully initiating CO₂ injection at Barnett Zero, in partnership

Key metrics to assess climate-related risks and opportunities are;



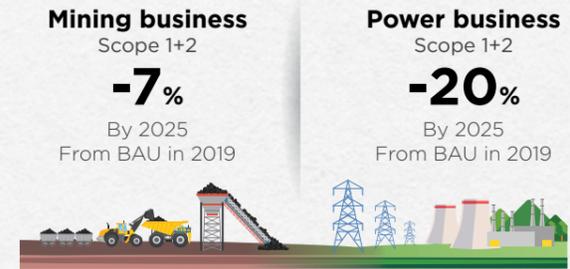
In this report, 5 gases are discussed due to their relationship with normal operational activities including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF₆).

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.

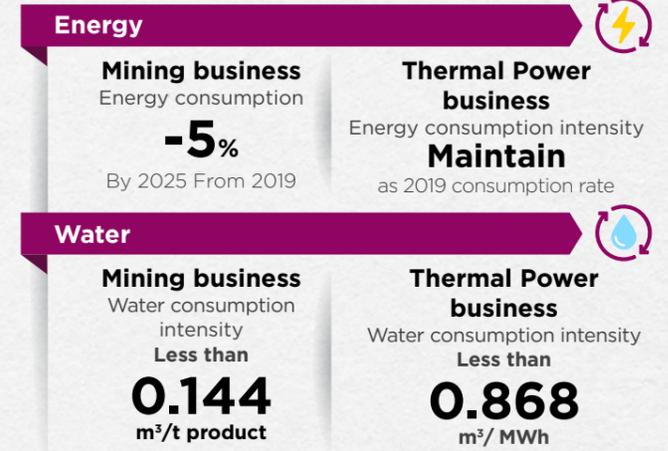
CLIMATE-RELATED TARGET

GHG emission reduction targets

We have set 5-year target (2021-2025) which aligned with our strategy. Meanwhile, we have developed long-term targets and their roadmap to achieve targets. We plan to announce the new long-term targets by 2024.



Other targets



PERFORMANCE

Emission scope

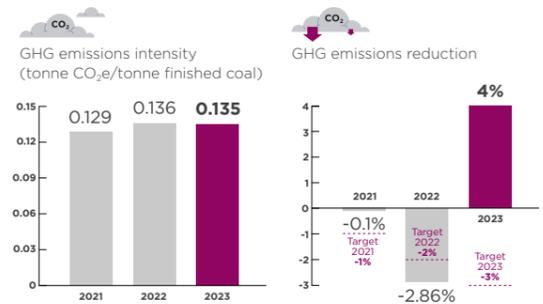
Emission scope	GHG emission (Million tCO ₂ e)		
	2021	2022	2023
Scope 1	6.990	8.507	8.369
Scope 1 - biogenic	0.352	0.247	0.234
Scope 2 - location based	0.249	0.269	0.245
Scope 3	57.715	51.807	48.004
- Cat 6: business travel*	Not available	Not available	0.001
- Cat 11: use of sold product	57.715	51.807	48.004

Note: partially disclosure

Performance against target

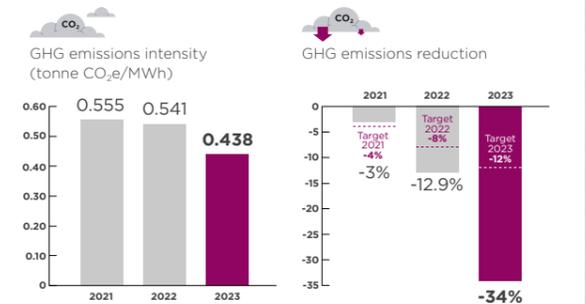
Mining Business

The emissions increased by 4% compared to the business-as-usual (BAU) due to higher fuel consumption in open-pit mine. However, we have reduced GHG around 500 ktCO₂e in underground mine.



Power Business (Thermal Power + Renewable Power)

The emissions decreased by 34% compared to the BAU. This reduction was the result of the Company's proactive approach in seeking opportunities to increase the proportion of total electricity generation from renewable energy and developing of initiatives on energy efficiency in our thermal power.



06

**LOOKING
AHEAD**

Conclude climate-related risk
and opportunity and way forward
of the organization

LOOKING AHEAD

This report is a fundamental of actions following TCFD recommendation. We have identified climate-related governance, risks and opportunities, and targets to manage our GHG emission portfolio. Regarding this report, we have conducted risk assessment of climate-related risks and opportunities that may have a material financial impact on Banpu in short-, medium-, and long-term as indicated in the report. Moreover, we have started to develop an ambitious target toward net zero emission with decarbonization strategy. We will continue to monitor developments and review our approach as necessary, to respond to evolving approaches to climate change and climate-related disclosures.

This report contains forward-looking statements based upon current expectations and assumptions regarding anticipated developments and other factors. They are not historical facts, nor guarantee any of future performance since they are subject to numerous assumptions, risks and uncertainties, which change over time. Forward-looking statements speak only as of the date they are made, and various factors could cause actual performance to differ materially from what expressed or implied by these forward-looking statements. We aim to evolve its disclosures in the future to provide meaningful information to stakeholders by adapting it to new facts and regulations impacting the changing climate landscape.

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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